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General Scientific

SHALL THE BRAIN WORKER TAKE EXERCISE?

J. MADISON TAYLOR, M. D.,

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Philadelphia.

A popular impression obtains that brain workers are frail beings in whom "the spirit is willing but the flesh is weak." Evidence from abundant facts shows that strongest thinkers are equipped with extra substantial bodies; they are in fact among the choicest of human products.

Nature provides that individuals of exceptional mentality shall be equipped with not only ample powers for thinking, but likewise for sustained endurance. Otherwise their usefulness would be only partial, incomplete, evanescent. The ablest are the fittest to survive as well as to get on in the world.

It is undesirable to differentiate economically, between the manual laborer and the brain worker with a view of determining forms of physical education for each, because it is only from a common basis of the best opportunities for physical elaboration that individuals can and will come to develop along their special trends. When groups have become evolved, choice of occupation made, it will be found that among the intellectuals are quite as large a proportion of powerful physiques. These demand the application of similar principles of physical conservation, however, differentiated in form or degree.

When we come to consider the question of whether brain workers shall cultivate their bodies in middle life during their zenith of productivity, so many factors must be liberally considered, that it becomes a matter for personal determination. Individuals differ markedly in their make up, in either original endowments or acquired peculiarities or both combined. Full consideration must be given to all the factors involved; no haphazard yes or no will suffice.

Shall the Brain Worker take Exercise?

The adviser has need to be well equipped to render a decision; including a mature experience in the science of medicine and also practical familiarity with such particular forms of activity as may be recommended. It

is far safer for him to give counsel from a personal standpoint and from not too remote or energetic a past. Boyhood echoes are misleading, in this (athletic) as in other domains. A long period of sedentary industry dulls recollection, debases judgment on so unfamiliar a topic. Manifold deplorable instances of damage wrought by reckless over-exertion are glibly quoted and tend to induce depreciation for any degree or kind of strenuous exertions.

When one realizes that man is not a mollusk but a mammal, with a body composed largely of muscles whose purpose is to act as the chief oxidizing agency, it becomes obvious that these muscle-oxygen-laboratories must be used normally or the organisms will speedily fall into decrepitude. The brain, to do its perfect work, must be supplied with clean blood. The only known means of cleaning the blood is by adequate action in and by the muscles. The problem is how this shall be done to meet requirements and not induce strains, or otherwise place too great a tax on the delicately poised mechanisms.

Some brain workers, especially at some times, should avoid all undue motor energizings; at other times voluntary activities are imperative. Beyond doubt a certain few persons have neither the impulse nor the need for bodily exertions. There is no ground for accusing them also of intellectuality.

While impulses to rest or to work should be followed they are only reliable guides when freed from the confusing domination of vitiated habits, artificialities of taste on the one hand, and on the other due considerations must be given to actual limitations. Among these are developmental faults, latent or insidious diseases in vital organs, or structural derangements of a kind compelling limitation of exertions.

The claim of some that mental energizing is capable of entirely or safely substituting motor energizing is to be gravely doubted. It is true some distinguished scholars, scientists, captains of industry or other intensive thinkers seem to produce uninterruptedly by trying to simulate disembodied spirits, omitting all active or gross physical exertions. They often survive, moreover, through long periods, even occasionally to great age. Upon examination such instances will prove to be exceptional individuals of extraordinary heredity and

power for adaption and compensation. Analogous also are those persons of large survival values who defy the laws of nature in diverse other directions, apparently unscathed. Especially interesting is it to note that the life history of a notorious miser is often extraordinarily long, he being also utterly disregardful of hygienic precautions.

When confronted by the histories of extraordinary individuals who maintain an even tenor of life under notoriously abnormal conditions we can only accept the facts and persistently search for fuller information as to actual causes.

As another side of the picture the daily experience of all observing physicians can be cited. Testimony is overwhelming to the effect that man must conform to type; must adapt his organism to environmental demands or suffer serious consequences.

Longevity is due primarily to good heredity, next (after balanced nutrition) to mental poise, serenity, equanimitas: they must include sound organs and resistent tissues, also escape from accidents, infections, and to instinctive selection and consistent pursuit of right forms of life consonant with their type or stage of evolution.

A common experience, one may say almost universal, is that among men who defy the canons of longevity with amazing success, none the less it is the rule, not the exception, to hear of pathetic cataclysms occurring, sudden breakings down both of body and of mind. These are almost invariably chargeable to sins against the laws of health of which disproportions are displayed between physical and mental exertion.

The commonest destructive phenomena are due to degenerative changes in the blood-vessels, involving heart, kidneys and brain. How do these arise? Badly balanced rations of food and of work and of play are among the most forceful.

We all need to know much more than is at present available of the factors of safety and body resources and defenses contributing to length of days beyond the average. Only by analysing a mass of such data can we get anywhere near to a comprehension of the puzzles of survival values, hence of longevity.

Of late unusual attention is being bestowed on problems of old age, "geriatrics."* We are now well on our way to a better group of concepts and principles of economic conduct.

Among the factors to be reckoned with are variants in original integrity of cells, tissues and especially in the ductless glands and other power houses for survival quite apart, apparently, from capacity for sustained action or endurance. In a charming book by Mrs. N. P. Shaler, entitled "Masters of Fate" are set forth epitomies of the life history and achievements of two hundred and fifty notable brain workers all of whom seriously handicapped by physical disabilities of one kind or another; all, however, became valuable contributors to world movements.

The book is replete with admirable hints as to ways and means of winning success or fame in spite of cruel handicaps or decrepitudes. One distinguishing characteristic common to each individual is a tendency to achieve much more than would seem possible to expect of such enfeebled bodies.

Herbert Spencer relates in his autobiography the interesting fact how he was able to dictate some one of his books for barely fifteen minutes and only after rowing on the lake for thirty minutes to warm up his circulation. Then he would rest, lying down for a

quarter of an hour and again set to work, repeating the routine hourly.

The late S. Weir Mitchell, himself an enthusiastic mountain climber and pedestrian, related to me an interesting conversation he had with the late John Biglow, who survived till he was ninety-seven. Mr. Biglow asked Dr. Mitchell how he had attained his then age of eighty. Biglow being the elder, Dr. Mitchell urged him to divulge his cherished principles of life. Mr. Biglow replied with unction he "had never smoked, never drank and never taken any form of exercise." Whereupon Dr. Mitchell replied, he himself had smoked since boyhood, had always taken wine and enormous amounts of active exercise. No man had ever lived a fuller, more agreeable or successful life than that of S. Weir Mitchell, and he ranged the hills till just before the end.

DIAGNOSTIC ERRORS IN SENILE CASES.*

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New York.

This is the fourth paper bearing the same or a similar title that I have presented during the past ten years. I feel, however, justified in doing so as there is probably no better way to arouse medical interest in the aged than by repeatedly exposing errors in the diagnosis and treatment of senile cases. In March, 1890, Seidel, in a memorable paper on "Diseases of Old Age," made this pregnant remark: "Mistakes are made daily in the treatment of the aged and the normal mortality of advanced life is considerably increased as a consequence of the hitherto neglected study of the anatomical and physiological peculiarities of the senile organism."

A study of the senile organism will force upon the thoughtful student the conclusions which I have embodied as the fundamental principles of geriatrics: "Senility is a physiological entity like childhood, and not a pathological state of maturity."

"Disease in senility is a pathological condition in a normally degenerating organ or tissue and not such a condition as is found in maturity complicated by degenerations."

"The treatment of disease in senility should have for its object the restoration of the diseased tissue to the state normal in senility and not to the state normal in maturity."

Failure to observe these fundamental principles is responsible for our failure to cure or relieve senile cases that might have been cured or relieved, and incidentally it causes the self-accusation of the physician who recognized his ignorance of geriatrics and must resort to the diagnostic placebo, "old age," to satisfy his conscience and the family of the improperly treated patient. Old age itself is rarely a cause of death. In almost every case death is due to some disease, although symptoms are often so mild or obscure that they are unnoticed until near the fatal end.

The principal sources of error in diagnosis in senile cases are, (1) considering the normal senile changes as diseases; (2) mistaking the senile degenerations for diseases which they resemble; (3) overlooking symptoms of disease which are masked by the manifestations of senility; (4) unreliable history, ill-defined symptoms and atypical diseases; (5) misinterpretation of signs, symptoms and symptom complexes. Let me present a few typical examples. A typical example of the first

*Nascher, Arnold Lorand, Metchnikoff, Robert Saunby, Sir Hermann Weber, H. M. Friedman, etc.

*Read at a meeting of the Williamsburg Medical Society.

class is the diagnosis and treatment of senile arteriosclerosis. In a paper on "A New Conception of Arteriosclerosis" which appeared in the *New York Medical Journal* Nov. 17, 1917, I am endeavoring to show that arteriosclerosis is not a disease per se, but a change in texture which may occur in various arterial conditions, physiological and pathological. Senile arteriosclerosis is a sign of senile arterial degeneration and is to a certain degree normal and physiological. There is a constant hardening of the blood vessels from birth. This hardening proceeds more rapidly when there has been a disease in which irritating substances are carried in the blood stream, causing endarteritis. When there has been no cause for endarteritis and its extension from the intima to the media, the degeneration of advanced life begins in the media. This degeneration is a fibrosis with diminished elasticity of the vessel and there occurs then a compensatory hypertrophy of the heart. There is also degeneration of the arterioles and in old age there is besides increased viscosity of the blood.

Here are four factors contributing to increase the systolic blood pressure in old age. An old patient gives a number of obscure symptoms and the physician finds a high blood pressure and makes a diagnosis, arteriosclerosis. He then proceeds to cure the arteriosclerosis by lowering the blood pressure, and if he has been able to bring down the systolic pressure he announces his cure of arteriosclerosis. Now it is not possible to cure or halt the normal senile degeneration of the arteries, but it is possible to reduce blood pressure just as it is possible to reduce fever, lessen pain, relieve local congestion and other symptoms. This, however, does not cure the condition of the blood vessels, which, in the aged, is a physiological degeneration. It may become pathological when it proceeds too rapidly, causes distressing symptoms or is complicated by a pathological process as occurs in syphilis, nephritis, diabetes or infection. In the normal senile degeneration of the arteries the systolic blood pressure does not exceed the height expressed in the formula, age plus 100 for the age; as for example, at the age of 70, the blood pressure should not exceed 170 mm. This blood pressure would be normal at that age.

Senile arteriosclerosis is always primary, diffused, and accompanied by other signs of senile degeneration as contracted kidney, venous degeneration and venosity, hardening of the xiphoid cartilage, senile constipation, etc. It comes on late, progresses slowly and the blood pressure does not exceed the before mentioned formula. Iodide of potassium will temporarily reduce the blood pressure, but the physiological symptoms of iodism soon appear and when the drug is discontinued the blood pressure will rise again to the normal height. The pathological form of arteriosclerosis is always secondary, may come on at any time of life, proceeds rapidly, is usually localized, the blood pressure is high and bears no relation to the age, it can be brought down through drugs, but falls naturally as the causative disease improves, and it then remains down.

Senile constipation, the most frequent ailment of the aged, is generally treated as a disease, although it is only a symptom of various senile degenerations. Most cases are due to atony of the intestines, the result of atrophy of the muscular fibers with consequent lessened peristalsis. Many cases are due to visceroptosis, kinks, dilated rectum or colon or weak abdominal walls. In many cases several of these causes for constipation exist together. To call this condition a disease is not an error in diagnosis but an unpardonable neglect to make a proper diagnosis. It is sometimes difficult to make a

proper diagnosis; to determine just what the underlying condition is. A stool every second or third day without the use of a cathartic and without other symptoms, is not constipation. In atrophy of the intestinal glands the stools are dry and contain particles of undigested food. Gastropothesis, enteropoeisis and hepatopoeisis can usually be determined by the physical signs. A dilated colon can be determined by percussion and a dilated rectum can be discovered by digital examination. It usually produces a sense of pressure and weight in the pelvis and great distress upon defecation. In these dilatations an enema brings away a large mass of feces. Atonic abdominal walls cause dyschesia and the patient will automatically compress his abdomen with his hands during the act of defecation to assist in the expulsion of stool. Senile emphysema is sometimes treated as a disease. It is pathological when it presents its obvious symptoms, dyspnoea, wheezing and mild cyanosis, when the patient is at rest. Ordinarily these symptoms appear only upon exertion and then the emphysema is the natural, normal degeneration of the lung and it is not a disease.

Under the second heading, mistaking senile degenerations for diseases which they resemble, the most common errors are, mistaking senile contracted kidney for chronic interstitial nephritis, and mistaking arthrosclerosis for chronic arthritis.

Cabot in his memorable paper on Diagnostic Pitfalls, stated that in the Massachusetts General Hospital only 50 per cent. of cases of chronic interstitial nephritis were correctly diagnosed. In private practice, without the advantage of the diagnostic facilities of the great hospital, the percentage of errors is probably much greater. *Chronic interstitial nephritis is rare in old age and most cases so diagnosed are cases of senile contracted kidney.* The senile contracted kidney shows upon autopsy the uniform fibrosis pointed out by Walsh of Philadelphia, while the pathological condition shows scattered areas of hyperplasia and tubal degeneration. Clinically the diagnosis depends upon the urinary findings. In the senile kidney the daily output of urine is in the male from 1,000 to 1,200 cc., in the female from 900 to 1,000 cc.; specific gravity generally between 1015 and 1025, never below 1010. In chronic interstitial nephritis the daily output is from 1,000 to 1,500 cc., specific gravity 1,002 to 1,012. A trace of albumin is found in both conditions but casts are found only in the pathological condition. Many symptoms usually associated with nephritis appear in senile cases but if each symptom is traced to its source it will be found that most are due to normal senile degenerations not connected with the kidneys.

Arthrosclerosis or hardening of the joints is a normal senile degeneration in which the tendons and ligaments harden, the cartilages become fibrillated and where they form the articular surfaces they become roughened, and the synovial sacs become dry. The ankle joints are most frequently affected. In senile arthrosclerosis there is no pain when the joint is at rest but upon prolonged motion there is increasing pain and stiffness. In the pathological condition the joint is swollen and tender and it becomes stiff when at rest. The pain and stiffness diminish upon motion or limbering up, as the patient calls it. In arthrosclerosis there is no swelling but upon prolonged standing or walking a hypostatic edema may appear.

Another error under this heading which is occasionally made with grave results is mistaking senile cardiac myofibrosis for chronic myocarditis. The history alone should suffice to differentiate between the two, the senile

degeneration being always a primary degeneration of a hypertrophied heart while the pathological condition is always secondary to an acute myocarditis, usually following an infectious disease. In both conditions the heart becomes weak and irregular under excessive activity and regular again during rest but in myocarditis the heart becomes stronger during rest while in myofibrosis it remains weak. Digitalis acts rapidly and beneficially in myocarditis, but it may be detrimental in myofibrosis.

Owing to the drying of the pleura in old age friction sounds are heard which may be mistaken for the friction sounds of pleurisy. This mistake is made occasionally when there is a senile atrophic bronchitis with scanty mucus and some pain when coughing. I have seen diagnoses of cancer of the liver, waxy liver and cirrhosis of the liver made in senile cases presenting obscure symptoms and the only clearly defined sign was the small firm liver with sharp borders which is physiological in old age. Such errors would not occur if physicians were familiar with the anatomical changes in advanced life.

Under the third heading, overlooking symptoms of disease which are masked by the manifestations of senile changes I will refer to a grave error which I have pointed out several times and saw repeated while preparing this paper. The symptoms of pneumonia in the aged are sometimes so mild that they are overlooked until the final pulmonary edema sets in. In many cases there are obscure symptoms such as malaise, unwillingness to leave the bed, rapid debility, headache, loss of appetite, a feeling of distress in the chest not amounting to actual pain, moroseness and a fear of impending calamity, etc. In the case referred to there were most of these symptoms for several days before the physician was called. He found a mouth temperature of 99.8 degrees, pulse 80, upon percussion hyperresonance, and upon auscultation friction sounds and a few rales. His diagnosis, emphysema and pleurisy, was based upon the physical signs of normal senile degeneration of the lungs and pleura. He overlooked the prostration, rapid respiration which, being shallow and not panting, was not noticed, the apparent efforts made by the patient to dislodge mucus in the chest by striking the chest frequently, and delirium, evidenced by restlessness and talking in sleep, which the patient had never done before. The seriousness of the patient's condition was not suspected until pulmonary edema set in a few hours before his death. The pneumonia of old age is generally an acute pulmonary congestion not due to micro-organisms, and there are absent the initial chill, high temperature, pain, rusty sputum and panting respiration of the infectious disease. In most cases there are rapid debility, malaise, a dull ache in the chest, mental dullness and the general appearance of profound physical depression. I have seen a diagnosis of "old age" made in several cases of this kind where a close physical examination revealed pulmonary congestion. Malaise in an aged person always means disease.

The most frequent errors in senile cases are due to unreliable history, ill-defined symptoms and atypical diseases. The aged are prone to exaggerate and when they forget and are pressed for an answer they will guess and invent statements. They will boast of their uniform good health and deny a history of serious illness in the face of such evidence as pock marks, scars of operations or acquired deformities. On the other hand they will exaggerate present symptoms and claim symptoms that might be suggested by the physician's questions, in order to obtain sympathy or to cause the physician to take a more serious view of their case. Occasionally in a spirit

of stoicism or to avoid a painful examination they will deny symptoms that are present or, having become accustomed to certain symptoms such as constipation, vertigo, dyspnoea, constant cough, incontinence of urine, etc., they will fail to mention them. A word of caution in dealing with aged patients will not be out of place here. The aged are sensitive and resent any doubt as to their truthfulness. The physician must avoid any expression of doubt if he wishes to hold the good will and confidence of his aged patient. If the patient says he cannot sleep, find out from the family if he does not take frequent naps during the day and find out from the same source if he does not take frequent nibbles of food when he complains that he has no appetite.

Occasionally an old person is obsessed with the idea that his family is trying to get rid of him. If the physician will at once attempt to change the patient's belief the patient will conclude that the physician is in league with the family and the physician's further usefulness in that case is over. It requires tact and patience to handle such a case, but the physician must do nothing that might incur the patient's ill-will or distrust if he would do any good. The clinical symptoms as given by the patient are rarely reliable not alone because he will forget, guess, invent and exaggerate, but also because his subjective symptoms are uncertain. He will complain of pain in a general way saying he has a headache, a belly ache, a pain in the chest or back, without being able to localize the pain or describe its character. Many of the symptoms must be elicited through skillful questioning but when it is evident that the patient is guessing the examination along that line should be postponed. I find it a good plan when it appears that the patient is guessing or inventing statements, to direct him to watch for the particular symptoms and see if they will appear under the treatment that I order. Women are sometimes deterred by modesty from mentioning such symptoms as vaginal discharges, urinary difficulties, vulvar pruritus, intertrigo or eczema. Let me present a typical case. The son of a woman aged 80 told the physician that his mother was irritable, nervous, frequently went to her room and locked herself in for hours and he heard her walking in her room at night. She would not have a physician and he was afraid that her mind was affected. The physician called and secured the good will of the old lady. She told him that she could not sleep at night and was nervous, had occasional attacks of vertigo, lost her appetite and did not feel as well as usual. Aside from an occasional headache she had no pain and could give no cause for her nervous condition. As there was no symptom referable to the genitals no questions regarding them were asked and the questions which her symptoms suggested gave no definite clue to the cause of her condition. She had taken medicine and while getting a bottle from the medicine case the physician noticed a number of ointment jars. This led to questions about surface lesions and she confessed that she had an intolerable itching which prevented her from sleeping. It required considerable coaxing and the assurance of certain relief to induce her to permit inspection of the vulva which was covered with scratch marks and an extension of an intertrigo from between the labia and the groin.

Many diseases which give clearly defined symptoms in earlier life, present atypical features in advanced life. Infectious diseases occur seldom in advanced life, but the aged are often carriers of infection. The typical temperature curves of typhoid and malaria are seldom found in these diseases in the aged. Errors in diagnosis occur frequently in diseases in the aged through the absence of symptoms that are prominent in earlier life.

Pain may be absent in such diseases as pneumonia, peritonitis, appendicitis, pleurisy, and in surgical conditions as fracture. The initial chill and high temperature that usher in acute inflammatory disease in earlier life, are frequently absent in the aged. Among diseases modified by age I will mention, hay asthma, pleurisy, cystitis, gastritis, various diseases of the skin, also various neuroses and psychoses.

Many errors in diagnosis are due to misinterpretation of symptoms and signs. The temperature, for example, will lead the physician astray if he does not remember that the rectal temperature in old age is about a degree lower than in earlier life and the mouth temperature is frequently two degrees lower than the rectal temperature. A mouth temperature of 103 in an aged person is very high and points to a grave condition. The senile pulse is often hard and irregular while the heart is weak and regular. In health there are often hyperemic areas over the malars resembling the hectic flushes seen in pneumonia and advanced tuberculosis. The contracted pupils and strained look of the aged patient who has presbyopia and does not wear his glasses resemble the expression of pain due to meningitis. The spleen in the aged is generally so greatly contracted that it cannot be felt in the diseases in which enlargement of the spleen is a prominent sign. Much stress has been laid upon the reflexes in the diagnosis of nervous and cerebral diseases, but the reflexes are sometimes exaggerated, sometimes diminished even in health in the aged.

There is some excuse for errors arising through misinterpretation of reflexes and other signs and symptoms which vary in health. There is no excuse for errors in diagnosis arising from ignorance of normal senile conditions, for errors due to inability to differentiate between normal senile conditions and diseases which they resemble, for overlooking minor symptoms of disease while noting the manifestations of senile changes, or for the many other errors which are due to ignorance. We may ease our conscience and satisfy the family by offering the diagnostic placebo "old age" as the diagnosis and cause of death. But the physician who is imbued with the fundamental principles of our profession, sympathy and science, sympathy to relieve distress wherever we may find it, science to study life and how to prolong it, will not be satisfied to hide his ignorance behind a placebo. He will consider the life and health of the aged as much in his keeping as the life and health of the child and he will study geriatrics as he studies paediatrics that he may minimize those errors in diagnosis and treatment of senile cases that lead to death.

SOUND PERCEPTION IN "DEAF-MUTES."

JOHN D. WRIGHT,
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New York.

In civilized society man's most important use for the power of sound perception is to hear speech. A child that cannot hear speech will not only never unconsciously learn to understand speech, but will never himself spontaneously learn to speak. Such a child is classed by the medical profession as a "deaf-mute." Deaf he is, and mute he is, but solely by reason of his deafness. Nevertheless, he can be taught to speak, even though the avenue of approach to the brain through the ear is absolutely closed. That is a slow, difficult and artificial process, and as in the case of artificial legs and artificial teeth and artificial flowers, the results are not as good as those obtained by the ordinary means supplied by nature.

In a surprising number of cases, however, children whom physicians have properly classed as "deaf-mutes" because they are deaf and, as a consequence of their deafness, are "mutes," have, nevertheless, a power of perceiving sounds within the range of the speaking voice. While it is not acute enough to enable them to acquire speech, or an understanding of spoken language, in the ordinary unconscious manner of the "hearing" child, because they cannot hear those sounds as far away as the distances of daily intercourse, and, perhaps, not even at much shorter distances, it is still sufficient to convey to the brain the impressions of articulatory utterance when the sounds originate very near the ear and are loud and distinct.

It is astonishing how deaf a child may be and yet can be taught to interpret into ideas the sounds of speech. The teaching process is precisely the same as that by which the hearing child learns to understand what is said to him, except that it is conducted at an inch or more from his ear, and partly while facing a mirror, instead of being carried on a yard or more away from him without any necessity for a mirror.

We can see the reason for this possibility when we remember what we learned in physics, that the intensity with which a sound is heard varies inversely as the square of the distance between the ear and the source of the sound, and therefore a sound uttered one inch from the child's ear affects his organ of hearing one thousand two hundred and ninety-six times as powerfully as the same sound spoken a yard from his ear.

The reason for the mirror is because under ordinary circumstances the child sees the face of the speaker and unconsciously observes the visible positions of the speech organs, and as unconsciously imitates them, while the child who is listening to sounds spoken an inch from his ear cannot see the face of the speaker unless they are both facing a mirror. It will be noticed that I said above "partly" while facing a mirror. The reason for not always conducting the training in front of a mirror is to secure at times an entire concentration of the child's attention upon the effort to discriminate between the sounds by means of hearing alone. The use of the mirror in the early stages is to aid the child to more accurately reproduce the sounds by seeing the positions of the speech organs of the speaker and his own, so far as they can be seen. Later, when a considerable hearing vocabulary has been acquired, the mirror serves a second purpose by enabling the eye to supplement the ear in interpreting speech just as it unconsciously aids the hearing child in the same way.

For more than twenty-five years I have been educating deaf children and teaching them to speak and to read the lips of those who speak to them, and I have found that slightly over 33% of them possessed a sufficient power of perceiving sounds pitched within the normal range of the speaking voice to enable me to teach them to interpret language through the ear. In some cases the amount of hearing was so small that it did not enable the pupil to learn to modulate his voice by ear, and yet he could learn to comprehend spoken language.

One of the great advantages of this work is the more symmetrical brain development that it makes possible. Those brain areas that are associated with the sense of hearing become atrophied and valueless when there is no access to them through the ears, since that is the only avenue by which development can be attained. Therefore, even though the results of this training may be meager as compared with those secured with the child of normal hearing, yet a degree of normality is

obtained in the deaf child that cannot be produced in any other way. Work along this line is in harmony with all psychological tendencies because for unnumbered ages man has received his language concepts principally by ear. It is, therefore, the line of least resistance when it is open, or when *it can be opened*.

This brings me to another point that I would like to call forcibly to the attention of the medical profession. If medical and surgical skill cannot restore even an approximately normal degree of hearing to a child, it can often slightly improve this power of sound perception, and while this improvement may be so slight that under the ordinary circumstances of home life it would serve no useful purpose, nevertheless, with proper educational training this very slight hearing power can be made of very great intellectual and articulatory benefit. Do not permit these low powers of hearing to go unutilized. They can be made of very great value to the child in opening to him a world that would be absolutely closed to him otherwise.

As the natural language learning period is from infancy to five years of age, these auricular exercises can profitably be given very early, and with a little training could be begun by mothers and fathers at home.

It is undoubtedly true that about one-third of the pupils in the special schools for the deaf possess an amount of power to perceive sound that would make it possible to teach them to understand loud speech very near the ear. Very little of this work is done, however, because it requires more individual attention than the authorities think they can provide. In very many cases this is probably a false economy, as much better educational results could be secured in this way than by the methods employed excluding all use of the ear.

1 Mt. Morris Park, W.

EMOTIONAL RELIGION AND MENTAL IMPAIRMENT.

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At no time since our Civil War have students of psychology found so much of interest in human affairs as in the present period.

Such a diversity of opinion on all subjects is held by the people that it is often difficult to interpret and analyze the source and cause of such feelings, without a careful study of social, economic and religious conditions.

It has been often repeated that there are few sane men in the world and that few people are in a normal mental condition.

If by sanity we mean a state of successful adaptation to environment and to fact, it may be true that there are but few sane men, for normality involves adaptation to the natural, while abnormality seeks and clings to the mysterious and supernatural.

A mind lacking powers of discrimination, differentiation and discernment is lacking the principal and most important elements of human intellectual requirements and is unfit for positions requiring ability and judgment.

Such mental impairment is one of the results of emotional religion.

In every State in the Union the increase of hospitals for the insane, with the resulting increase of burdens to the taxpayer, is already appalling.

In the State of Massachusetts alone over five million dollars are being annually expended for the care of the insane and feeble-minded, and the records show

that each year at least three thousand people are reaching that mental stage where they can no longer be left at large with safety to the community, but must become public charges.

Four well-known causes of mental defect are syphilis, feeble-mindedness, emotional religion and alcohol and it is the object of this article to briefly investigate the mental impairment caused by emotional religion.

It may be truthfully stated that one of the essential elements of a great democracy is the stimulation of individual thought along all lines and the collective education of the people as a safeguard to law and order.

It is also a well-observed fact and one within the common experience of all acute observers that anything which disposes to mental morbidity correspondingly predisposes to religion, and that the causative factors of insanity and of mental unbalance in general foster religious fervor.

There is so much mental unsoundness which has resulted from emotional religions and so-called "revivals" that it is becoming a serious national handicap and the question should be carefully studied in order that the mental health of the nation may be protected.

The best citizen is the man who strives to attain mental, moral and physical perfection and to live in accordance with the laws of nature, as interpreted by scientific knowledge.

In the attainment of such ends no subject is so sacred that it is exempt from investigation.

All religious institutions have for their object, primarily, the promulgation of their own particular creed, and when the people show no interest in the church free public meetings are held, called "revivals," to stimulate interest and renew membership.

The man who is led by these revivals to renew his interest and membership in a dying church is said to have "experienced religion."

Psychology fully explains all such phenomenon, so let us briefly look at the causes and effects.

A large room, called a "tabernacle," is built, capable of holding from ten to twenty thousand people, brilliantly lighted by electricity, the ground covered with sawdust in place of a board floor, the seats made of hard board, straight-backed and uncomfortable, and the whole place cold and dreary with no provision for heat.

The stage has seats for a large choir and the pulpit is so arranged that the performer or "evangelist" may have room to "expound" and "hold forth" at will.

It is a well-known psychological fact that music tends to dispel all previous mental thoughts and to place a person in a receptive condition; therefore at least one-half an hour is devoted to the singing of hymns.

The music, the glare of the electric lights, the bodily heat of the crowd, the fine, dry dust from the sawdust floor, the cramped and immobile position from the hard seats, the continual shifting of the eyes to follow the antics of the evangelist, the crowd psychology, all produce an abnormal state of mind in which the emotions are overstimulated and in which condition an effort is made to hypnotize and stampede the audience into becoming church members.

The evangelistic performer talks rapidly, positively and strenuously; he utters the dogmatic affirmations of what he represents to be the "word" of his God.

Intense mental excitement is produced followed by a passive state, when the audience is requested to come forward.

Urged by the ushers, the sense of stress impelling to movement now begins to crystallize itself in a disposition to join the same movement and the hypnotized

strong find themselves in the front seats weeping and completely unnerved.

For those who pass into an unconscious state an emergency hospital is provided.

"So the individual has been excited, terrorized, emotionalized and thrown into a condition of mental weakness called 'conversion.'

"He has been overwhelmed with mental confusion, clouding of consciousness, disorders and falsifications of perception which produce hallucinations and illusions, and is thus rendered prone to delusion."

So the attainment of the so-called "religious experience" and "religious sense" through revivals, is not an introduction to the supernatural but is a dangerous sub-normal condition.

The person who attends these revivals, which are nothing more or less than attempts at crowd hypnotism, gives up his own individuality to the composite, collective consciousness of the whole.

"He becomes hyperesthetic, super-impressionable and correspondingly super-credulous and super-suggestible."

Note the common experiment on a living frog's leg.

Send a physical stimulus in shape of an electrical current through the leg of a live frog and a contraction at once takes place, followed by a relaxation when the current is stopped. Now send a rapid succession of such currents, so the muscle cannot relax after each contraction and the muscle will remain contracted and eventually die of strangulation. Substitute for the electrical stimulus a series of hard blows and a single contraction is produced which is not followed by relaxation but by a tetanic rigidity which eventually kills the muscle.

Now compare the frog's muscle with the condition brought about on a sensitive mind by a bombardment of abnormal sense impressions, such as a man of the Sunday type produces.

The listener is thrown into a highly tensile state, followed by a glow of passionate super-emotion from which he experiences relief by "hitting the trail."

Under these conditions the sexual emotions and erotic impulses are abnormally stimulated. Since the predominating age of conversion is near or at the time of puberty, when the boy or girl first experiences the dawn of sexual impulse, a direct and latent suggestion falsely interpreted through religious teaching or conversion starts the child into adolescence in a well-defined state of delusion.

For these reasons it is well to keep young people away from all so-called revivals.

"The fundamental emotions aroused are directly and essentially depressing, and are associated with fear, dread and panic, from which state, a reactive exaltation is the only relief afforded. The victim on being relieved from this cramp or tetany, passes into the expansive stage of maniacal exultation with delusions of grandeur, which are the first symptoms of an "unbalanced mind."

So he tells his friends that he "has found Jesus and is walking with God."

We therefore find as an essential result of religious emotional excitement, a disturbance of equilibrium or mental balance with a tendency to instability, with exaltation and depression, which are characteristics of a common type of insanity.

The victim of emotional religion is thus placed in an hysterical state, a weakened condition in those emotionally predisposed and prone on slight provocation to hysterical laughter, levity and to abrupt changes of tears and sobbing.

"Such individuals are notoriously liars, thieves and moral renegades in all respects regarding common honesty and social intercourse. They are tyrants, oblivious to the rights and feelings of others, are especially prone to the use of drugs and liquors and are entirely untrustworthy in marital, social and financial relations."

Is it not high time to look these conditions squarely

in the face and take measures for the suppression of such causes?

Dr. Joseph Collins of the New York Neurological Institute, in an article on "Revivals, Past and Present,"² calls attention to some of the psychological phenomena involved in these so-called "revivals."

He calls attention to the fact that "American people are peculiarly susceptible to suggestion and are especially of an emotional type."

He says that "religious emotion" may be crystallized into an "experience meeting or a lynching bee," both very common in this country, of freedom of religious liberty and equal justice to all.

His summing up of the evangelist is as follows, "The most striking features of Mr. Sunday's makeup intellectually, emotionally and spiritually spell what is technically called "infantilism."

"The after effects of Mr. Sunday's visit to the City of Boston was a vote for license by a greater majority than ever before in the history of the city, notwithstanding the fact that Mr. Sunday came with the avowed purpose to "put the rotten liquor gang out of business."³

Reports obtained from a majority of gin mills and beer saloons in New York City indicate that they have done more business during the past six months, since Mr. Sunday's revival, than they have done in any six months in a decade.

The New York *World* of Nov. 7th says, "New York had a Billy Sunday revival in the spring and then elected a Tammany mayor in the fall, thus demonstrating the cumulative effects of righteousness."

*The Rev. John S. Allen assisted Dr. Martin of the Fort Washington Presbyterian Church in looking up those who had signed cards at the revival. He says, "Of 253 cards that I investigated more than 68 per cent. were regular church members. If Mr. Sunday succeeded in reaching and awakening to a "new life" any of the "booze fighters," gamblers and other bad characters that he so often exhorted, they signed no card that passed through my hands." *Is there any good reason why any preacher of the gospel should not present the same careful summary of facts as do the teachers in our schools of science?*

If religion is worth having, should it not be a religion based on scientific facts and conforming with such natural truths as have been discovered and are in accordance with the common experience of all mankind?

When will the American people learn that the spirit of democracy demands an education of the people, not based on faith and tradition but on the experiences and teachings of science and reason?

With mental health is bound to come a strong desire for physical and moral health and with such a trinity an altruistic nation would soon result.

E. R. Ruediger, Manila, describes some experiments he made with the view of finding some chemical agent which would render serum sterile and keep it so, without interfering with the tests to be applied to it. When human serum is sent from a distance for the Wassermann reaction, it sometimes arrives in an utterly unfit condition for the examination; Ruediger experimented with phenol, lysol, tricresol, and chloroform, all of which were soon abandoned as unsuitable. A more prolonged trial was made of formalin and glycerin but it was found that the former was not suitable for the preservation of human serum intended for the Wassermann test. Sera which gave moderately positive results before the addition of formalin yielded negative, or nearly negative, results after this agent had been added. Glycerin, however, kept the serum sterile and did not noticeably influence the Wassermann reaction, nor the Tschernogubow modification of it. (*Philippine Jour. of Trop. Med.*, Vol. XI.)

²From "The Conversion of Hamilton Wheeler, Pandect Pub. Co., Bloomington, Ill.

³Harper's Magazine, Nov. 1917.

⁴From Truth Seeker, N. Y., Nov. 17, 1917.

AN AID IN THE DIAGNOSIS OF WEAK FOOT.

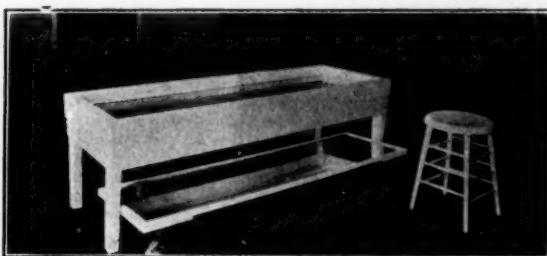
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Objective study of arch behavior from the plantar aspect of the foot, during locomotion under varying conditions of strain, has been found by the writer to add something of value to the diagnostic resources of orthopedics. In this preliminary paper a device is illustrated and described which enables one to apply this principle in a very simple manner.

By way of introduction, it may be stated that there are evidently many things about weak feet known to our most authoritative writers on orthopedics, civil and military, which present methods of examination cannot be said to reveal clinically with entire satisfaction to the diagnostician. While mechanistic principles are quite thoroughly expounded it would appear that the need for simple devices that will serve to demonstrate them is not fully met.

Thus, we are told that the foot must be visualized as a mechanism of which grades of efficiency should be recognized, enabling us to perceive wherein a foot is weak, even though the weakness causes no symptoms whatever; in all cases of suspected weakness of the foot a thorough examination must be made of its functional ability, and such an examination should determine the degree and character of changes in function; functional ability can be estimated only by the manner in which active work is performed; how the arch responds to the forces applied to it must govern our conclusions; the arch must be properly protected by muscular action—in walking there is a voluntary protection of the foot from overstrain; voluntary control may become limited in weak foot and modified function may also make accommodative changes in structure apparent; there is one feature common to every grade of weak foot: the foot regarded as a mechanism is weak as compared to a normal standard—where there should be strength there is relaxation; and finally we are told that weak feet lose their spring.

Now, it is true that we have some means and methods by which we may inform ourselves more or less as to these things, but there can be no doubt that there is room for auxiliary or supplementary aids. It is in the belief that the device about to be described will prove to be a useful resource in many cases that the writer presumes to submit for consideration his particular angle of approach to a problem which he conceives to be incompletely solved.



Briefly, the apparatus consists of a plate glass top one inch thick, eighteen inches wide, and five feet long set into a frame which supports it all around for a distance of one inch from its edge, which frame in turn sets upon another frame supported by four legs. The plate glass surface is about nineteen inches from the floor. Between

two of the side legs is pivoted a plate glass mirror eighteen inches wide and about five feet long.

When a person walks barefooted upon the upper glass one gets a moving picture of the feet in action in the mirror, and may study in detail the behavior of the arches. In a well lighted room in the daytime; or when a hooded 40-watt lamp, placed on the floor at the observer's end of the apparatus, is used at night, this picture is very clear. With the mirror in a horizontal plane, or with its outer edge tilted slightly upward, a good view may be obtained if the observer seats himself in the position indicated by the stool in the illustration; or advantage may be taken of the play of lights and shadows brought out by observation from the other side of the apparatus, with the inner edge of the mirror resting upon the floor. Especially important from the latter point of view is the fact that the oblique reflection of whichever foot happens to be the nearer to the mirror gives a sharp definition of the contour of the inner side of the foot, either as normally concave (the so-called lateral arch) or tending toward abnormal convexity under strain if there is weakness.

Orthopedists properly believe that bearing surface tests of the feet are probably the least important of our diagnostic resources; that is, static impressions of one sort or another. Lest anyone confuse the author's method with these bearing surface tests he wishes to point out that he is concerned with the dynamics of the arch during locomotion, and not with bearing surfaces primarily.

Expert familiarity with the behavior of the normal arch under ordinary conditions and under strain induced by weight bearing will enable an examiner to appreciate nicely evidences of weakness when he meets with substandard feet. A good foot will show no appreciable misbehavior under a strain of seventy pounds in addition to the subject's own body weight, since adequate protective resources at once come into play during locomotion. It should be quite feasible in practice not only to detect the substandard foot but to relate it to a scale similar to the Snellen vision test for distance. Thus if feet apparently normal under ordinary walking conditions show undue strain under a twenty-pound addition to the body weight, such feet might be graded as

20	70
—. The normal foot would be —.	
70	70

Experience will determine the deadline beyond which lies the irreclaimable foot, and the tactical lines of defense against the pedal enemy; in the pedal spectrum, as it were, there shall be laid off a safe zone, a reclaimable zone, a doubtful zone and a hopeless zone.

The writer has found that arch inefficiency becomes more obvious when the subject turns in his tracks at the end of the glass.

Differences in the arch efficiency of the two feet are quite common. One often encounters a good foot and a very weak foot in the same subject.

A man may be able to hop on the anterior part of his feet to-day but nevertheless break down after a week of coal-shoveling on a rolling ship. Anything that will help in foretelling such a contingency, or that will aid us in assigning men to work suited to their pedal capacities, needs no apology.

An army is commonly said to march on its belly, but poor pedal risks will not get very far on either their feet or their bellies.

The way to find out how feet are going to stand strain is to subject them to strain and judge them in action from the plantar aspect.

Dumbbells will be found handy in imposing varying degrees of strain upon the feet. It might be advantageous in examining the arches of prospective recruits to report upon their behavior under the impedimenta of heavy marching order.

The writer hopes that the simplicity of his method will recommend it to practical diagnosticians.

115 Johnson Street.

WHAT THE WAR HAS DONE FOR MEDICINE.

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The great war has presented to the world a new form of community life, with a new combination of the various elements which are to be found in every concentration of the populations of Western countries.

This war is unlike any previous war in that the old idea of campaigns with armies fighting battles and moving over large districts of territory was true in Belgium and France only for the first few weeks of the conflict. Such a conception has been realized more in the distant battlefields of Asia and Eastern Europe. The majority of the troops engaged on the West front have settled down to a permanent location and have continued more or less fixed in position for more than three years while they carry on their daily and nightly tasks of combat in what is known as trench warfare.

This war of 1914-1918 has developed, therefore, a community which has a population exclusively male, densely concentrated into habitations of the rudest structure, without modern facilities for sanitation for ordinary cleanliness or for the housekeeping needs of the poorest dwellers in modern cities. The inhabitants of these "towns" are absolutely non-supporting and chiefly employed in killing with rifles, bombs and machine guns their nearest neighbors, or in protecting themselves from the like desire of their neighbors to "do" them first.

This population is a shifting one so far as the individuals are concerned, and it must be supplied with every necessity of life and with the munition supplies, as well, to carry on its chief occupation. These trench towns consume in proportion to their population a vast amount of supplies, and the inhabitants live a life entirely different from that of any community previously known in times of peace.

Such a community has developed new medical problems and has exaggerated some older ones already well known to the Army Medical Departments of all nations. The modern weapons with their high explosives and rapid fire and the inhumanities of asphyxiating gases and liquid fire have produced surgical conditions which are extremely infrequent as complications of the accidents of civil life. The habit of continuous warfare also has compelled the relief squads to delay their merciful tasks, and there results a high percentage of neglected infection and of the severer forms of blood poisoning and gangrene which modern aseptic surgery had eliminated from the experience of hospital practice.

At the beginning of the war an appreciable number of the troops had not been protected by the modern methods of vaccination against typhoid. That disease, and more particularly the closely allied condition paratyphoid, were very prevalent. At the present time both diseases have been controlled to a large extent by a full application of the methods which were developed and applied first in the army of the United States. At the present time, owing to the perverse influence of the so-

called "anti-vivisectionists" in England this form of preventive inoculation is only voluntary in the English army. Nevertheless, nearly all the Tommies request it because its good effects have been demonstrated so conclusively even to the enlisted man. The latest development of the war is an earnest endeavor to apply the same preventive measure to control the various forms of pneumonia which has become a real menace to the troops wherever they are concentrated in large numbers.

The war has necessitated the formation of methods to control diseases communicated by water. This has been done and dysentery, one of the oldest foes of armies, has been made less prevalent than in former wars. The present-day army physician must do more on these lines, however. He must discover by quick action any contamination of wells and other supplies of drinking water from the addition of dead animals, sewage and even of mineral poisons such as arsenic whenever the Allies advance in the territory lately occupied by the modern Huns.

The war has emphasized the importance of the group of diseases which are transmitted by the bite of vermin. One of these, known as "spotted typhus," is caused by the body louse and is normally found in Southeastern Europe. It has been controlled by a rigid application of sanitary rules and by inoculation. Another disease of this group is known as trench fever, and has been discovered and introduced into Western Europe by the war, probably from the Orient. It is a short, very debilitating fever of low mortality, but which incapacitates its victims for an appreciable period. A hitherto unknown disease known as trench dropsy has appeared as a direct result of the unsanitary life and monotony of food incident to life at the front. It simulates Bright's disease but seems to be nearer akin to such diseases as Beri-Beri and Scurvy than to nephritis. The medical staffs have controlled the ravages and negatived the military advantages which the German Military Staff expected to gain from the illegitimate use of large quantities of irritating gases. This was done by the application of properly constructed masks, although a number of casualties and substantial gains were made at the first attempt to advance in this manner.

The greatest additions to the antiseptic treatment of wounds have come from the chemical studies of Dr. Dakin who has applied in various ways the properties of chlorine preparations to the disinfection of the wounds of this war. The problem which Dr. Dakin solved was to discover strong antiseptics which were able to destroy microbes without damaging normal tissues. Dr. Alexis Carrel developed a method of using the antiseptics of Dr. Dakin in the severely infected wounds which came to his hospital on the French front. His method consists of putting into the wounded tissues a system of multiple tubes and keeping the wound constantly washed with the antiseptic solution. The progress of the wound is watched by a daily bacteriological examination, and as soon as it is germ-free it is closed and healing is quite prompt if the observations have been done in a precise manner.

The most recent application of the new chlorine antiseptic has been developed by the later studies of Dr. Dakin in conjunction with Dr. E. K. Dunham. They have worked with solutions in oil instead of water. They find that their newer method is more simple, equally efficacious and of wider application. The latest success in the use of these solutions in oil to disinfect the upper air passages of disease carriers of the causative germs of pneumonia and of epidemic meningitis and in the treatment of venereal disease.

The war has developed two large groups of cripples, one including those who have been maimed by the loss of hands, of arms, of legs, of eyesight and in other physical ways. A great endeavor has begun to re-educate these men and to fit them for new trades and for a useful and self-supporting life. Many of this group of men can be taught to do work equally effective to that of their pre-battle activities, although in a totally different line of endeavor. The second group of cripples are those who suffer from functional disturbances of the central nervous system. These cases present paralyses and other disturbances of locomotion which are purely hysterical, or they show mental disorders which are also functional but which simulate true insanity in any of its manifold varieties. One of the most characteristic cases is that known as "shell shock" which is directly attributed to the sudden and unexpected exposure to the vibration and noise of the discharge of high explosives in a person overtired by physical work and overwrought by mental fatigue. A great success has been achieved by systems of nerve and muscle education, especially in French institutions devoted to this work. Many of the sufferers from these functional disturbances of the nervous system have been returned to a useful civil life, and some have rejoined the fighting ranks.

The effect of the war on medical education has been very striking.

The war has taken away all the surplusage from medical teaching staffs—particularly the surgical branches—and has rendered a complete medical education increasingly difficult. The College of Physicians and Surgeons, Columbia University, has lost probably more than a fourth of its force of instructors; in surgery about a third. The effect on civil hospitals has been equally startling. The attending staffs have been depleted in equal ratio with the staffs of the medical colleges. Hospital internes have accepted service after the one year of training required by law for the army and navy. Because of their enthusiasm they have not waited to finish the two years usually required by most hospitals in this part of the country. There has been tremendous upsetting of routine and personnel. Probably more than one-half of the internes have been lost to their hospitals. Many hospitals have reduced the term of service to one year.

To meet this deficit of men the largest medical schools of New York City have put new speed into their instruction by omitting the usual vacation between the third and fourth years, and will graduate students in February, instead of June. Columbia, New York University and Fordham have made this change.

At the same time, by intensive training and by clinging tenaciously to high standards, the medical schools are resolved, as well as confident, that the war shall not make the coming generation of physicians less well trained. When the score is added it will be found that the war has done much to advance medicine along particular lines and that medicine has done much to advance the war.

Primary Gonococcus Prostatitis.

Porcelli's patient complained merely of a sensation of cold localized in the urethra its entire length, but nothing could be found to explain it, and he grew thin and neurasthenic. Closer examination revealed a chronic prostatitis, and gonococci were cultivated from the pus expressed. There was no history of gonorrhoeal urethritis, and there was much to suggest that the prostatitis was primary and had induced the sexual neurasthenia. (*Riforma Medica*, Naples, Sept. 29, 1917.)

X-RAY DIAGNOSIS OF LUNG AND PLEURAL DISEASES.

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During the past fourteen months I have examined over six hundred and fifty patients at the Long Island College Hospital, for the purpose of proving or disproving diseases of the chest, or throwing light upon some obscure intrathoracic condition. Most of these patients were adults, but there were quite a number of children examined as well. Although radiology is a great help in studying chest pathology in children, the lesions are not so easily differentiated as in adults, especially in very early disease. In adults, however, it is a means second to none in giving an answer to the medical problems often confronting the internist and general practitioner.

In work of this kind one comes in contact with many cases of tuberculosis in all forms and stages. This malady, indeed, constitutes most of our chronic chest diseases, hence I shall take it up first.

Tuberculosis. All of us have a certain amount of tuberculosis, or at least have had it at some time. The body has been able to take care of the infection, however, and the disease has not taken hold, so to speak. On the radiograph, though, these lesions may be demonstrated, hence we have another difficulty to contend with, namely, to differentiate clinical from roentgenological tuberculosis. This will be taken up later.

Let us briefly run over the anatomy of the lungs as seen by the x-rays. There are certain shadows seen which present a tree-like appearance, according to Dunham. These consist of the artery, the vein, the bronchus, the lymphatic vessel and their connective tissue. They become smaller as they approach the periphery, and the distal portions are designated as linear markings. Dunham claims that these linear markings are not seen normally at the periphery of the lung. When they are seen there, and the tree-like shadows extending from the lung roots are more dense and nodular or irregular in form, thereby becoming fan-shaped with the apex towards the hilum, each trunk's density not being homogeneous, but having a distinct characteristic marking, then we are dealing with tuberculosis. A plate showing homogeneous lesions is probably not tuberculosis. The above, of course, is a description of the early stage of phthisis. In the more advanced stages, the diagnosis becomes less difficult. There is the mediastinal gland thickening, clouding of the apices, consolidation and cavity formation. Consolidation throws a dense shadow, which extends from the hilum, whereas in cavity formation there is a well-defined area of lack of density.

It is hard to differentiate clinical from roentgenological tuberculosis. By the former is meant the disease in the active stage; in the latter, the disease may be healed or lying dormant.

In active tuberculosis one sees an irregular, spotty infiltration of the lung of a rather fuzzy nature. In the healed or dormant type there may be well-defined areas of density with clear-cut margins, or there may be calcified nodules—the latter indicating very old disease. Often one can not distinguish between the two types in question by the x-ray plate alone. One must, in addition, take into consideration the physical signs. One individual may have marked lesions in both lungs who is apparently enjoying good health and showing none of the signs of the disease, whereas another with

only slight lesions may be confined to bed and be expectorating tubercle bacilli.

Pneumonia shows a somewhat different picture from that of tuberculosis. In children it is hard to differentiate the two conditions, and quite often it is impossible to do so. Pneumonia starts at the periphery and gradually approaches the hilum of the lung, whereas tuberculosis takes the opposite path, starting at the hilum and extending to the periphery. It is claimed that one does not get physical signs in pneumonia until the hilum is reached. In pneumonia the density is very great and more or less homogeneous, without involvement of the apex of the other lung, and there is not much involvement of the mediastinum of the unaffected area, unless the patient happens to have a double pneumonia, or in addition, tuberculosis.

Unresolved pneumonia may confuse one both in the clinical and roentgenological findings. One case which I saw in the Johns Hopkins Hospital two years ago was either an unresolved pneumonia, new growth, or aneurism with new growth. There seemed to be a characteristic pulsation with the fluoroscope with a marked density continuing to the periphery of the right upper lung. The mediastinum presented a mass, but the heart retained its normal position. It was known that this patient had had pneumonia a short while before. At the last observation, he presented signs of consolidation which were typical of either pneumonia or new growth, but he was becoming progressively weaker. I have not been able to ascertain the final facts about the case. This illustrates, however, the serious problems which occasionally confront the roentgenologist.

Acute bronchitis. This condition alone does not produce characteristic shadows. The disease has not usually had time to cause marked changes in the lung structure. When such changes occur, however, the chronic stage is reached.

Chronic bronchitis. By chronic bronchitis I have reference to a bronchitis of long standing produced by organisms other than the tubercle bacilli. Here one sees an accentuation of all the lung markings which is more or less regular in form and generally distributed. Peribronchial infiltration is seen and the glands of the hilum are often enlarged.

Abscess of the lung occurs occasionally, and I have observed several cases recently. This throws a dense shadow which may or may not have radiations. It is hard to differentiate from new growth, therefore the history and clinical findings must be taken into consideration.

Pneumoconiosis gives a picture of enlarged glands at the hilum, and marked thickening of the bronchi. This same picture may be seen in a chronic bronchitis, however.

Infarction of the lung comes on suddenly. At first there is no definite picture. Later, after symptoms subside, there is a well-defined shadow present.

Syphilis of the lung is another problem with which we have to deal. *Gumma formation* may simulate new growth, or diffuse infiltration may resemble tuberculosis. With a dilated aorta containing dense areas, or the presence of an aneurism in the same roentgenogram, one should think of syphilis. The history, signs, symptoms and surely the Wassermann test must be taken into consideration.

Bronchiectasis shows much thickened and dilated bronchi. There is considerable peribronchial thickening, and on the whole it is quite difficult to make an absolute diagnosis.

New Growths in the lungs are frequently seen. The simple forms are very rare and do not need much men-

tion. Personally, I have never seen one of this type. One must be careful, however, as enchondromata of the costal cartilages may cause confusion. These, too, are rare.

Primary Malignant Growths of the lung are seen, but not often. They are well defined and simulate aneurysms somewhat in their clear-cut shadows. If one can rule out a primary growth elsewhere, then it may be considered as such.

Of the growths of the lungs, those to be considered of great importance are Hodgkin's disease and sarcoma.

Hodgkin's Disease presents large mediastinal masses, with or without involvement of the bronchial glands. One usually sees in the radiograph swellings around the neck suggesting involvement of the lymph nodes there. Time and clinical observation will have to make this diagnosis. The roentgenogram gives the amount of mediastinal involvement, however, thereby allowing one to make somewhat of a prognosis.

Lymphosarcoma usually invades the mediastinum, and is of a rapid growth. There is emaciation and probably a history of primary growth elsewhere.

Sarcoma of the lungs arises in the glands of the mediastinum, and spreads out from there by direct extension. This may become very large and may be confused with an aneurism. It is not usually as clean cut and regular in outline as an aneurism, and the characteristic pulsations of the latter are absent. In aneurism the heart occupies a more or less transverse position. Sometimes a sarcoma may be disseminated all over the lungs and pleurae. This will give a generalized infiltration. It is, as a rule, homogeneous, the whole lung being affected about the same time. In tuberculosis, on the other hand, as stated previously, the picture is not a homogeneous one.

Metastatic Carcinomata are very hard to differentiate from sarcomata. They present clear cut circumscribed areas of increased density, varying in size, and found near the hilum. As a rule, they are nearer the base than the apices. A history of the primary growth elsewhere will help in the diagnosis.

Hydatid Cysts should not be overlooked here, although they are rare in this country. The shadow produced by them is round and clear cut, and may be found in any part of the lungs, but usually in the right lower lobe. Most cysts of this character are secondary to cysts of the liver and gain entrance to the lungs by penetrating the diaphragm. One might be suspicious but would have to have some clinical evidence before a sure diagnosis could be made. A rapidly growing sarcoma, which becomes hemorrhagic, may simulate this condition.

Chronic Passive Congestion of the lungs presents a picture which should be noted. The organs are greatly infiltrated and there seems to be marked increase of connective tissue. In this condition there is a large heart present. This calls our attention to the cardio-vascular system. The infiltration, however, is rather characteristic, following the bronchial trees, and being more or less homogeneous in both lungs. This last point is a very helpful one.

Acute Pleurisy may be characterized by the effusion of fluid in the pleural cavity. There may be only a very thin layer present, and consequently one gets a general opacity to a mild degree over the entire affected side.

Chronic Pleurisy with effusion is seen more often than the acute form, and it is nearly always quite characteristic. There is a definite opacity over the fluid and this covers the angles at the bases—thereby not permitting one to see lung structure at these points. The heart

may be pushed over, which will help to characterize the condition more specifically.

Thickened Pleura gives a picture similar to the above. It may not be as regular in outline, however. The two conditions are hard to differentiate, although in the former a more dense shadow is usually elicited.

Localized Empyema may be recognized by a dense shadow, usually interlobar.

Pneumothorax displays a chest where there is a portion in which there is absolutely no lung markings. This is due to the replacement of the lung by the air.

Pyopneumothorax may be diagnosed by the appearance of a straight line. Below this line there is a dense shadow—the pus, above it a clear area, and above this the lung tissue may be seen.

Secondary Carcinoma of the Pleurae is hard to distinguish from lesions of the lung. A mere mention of this is sufficient, as it is of no practical importance, so far as I can see.

Calcification of the Pleurae is rather rare. I have seen one case only. This was characterized by a very dense opacity, laid down in striations, one portion being more dense than another. The picture is unlike that of a pleural effusion.

Foreign Bodies may occur in the pleural cavity. A drainage tube may be left there. As a rule, these can be located.

I have endeavored to point out briefly the pathology of lung diseases, as observed on the x-ray plate. In a paper of this length one cannot take up this subject in detail, but simply must lay stress on the important points. Our work at the Long Island College Hospital has been a great aid indeed, in assisting in the accurate diagnosis of lung and pleural conditions. In addition to diagnosis, roentgenology plays a great role in the prognosis of disease. It also helps to decide the justification of operation on patients with malignant growths. If more chests were examined in this connection there would be more patients saved from useless and unwarranted surgery, as it is too late to operate upon a case successfully when the mediastinum or lung shows metastatic involvement.

142 Henry Street.

DUST AND MINERS' TUBERCULOSIS.

JACQUES W. REDWAY, F. R. G. S.,
Mount Vernon, N. Y.

Pneumonia has been so common among miners whose work keeps them underground ten hours a day or more, that an abnormally large percentage and a high death rate as compared with the number of cases among above-ground workmen has been taken for granted as unavoidable.

Researches have shown that the prevalence varies greatly. In some mining regions the death toll is high; in others it is scarcely above normal. In one mine it may be, perhaps, far in excess of that in another nearby. In coal mines, carbon dioxide, carbon monoxide, methane, sulphur dioxide and other gases have been alleged causes—and doubtless these gases have been fruitful sources of disease and death. Intemperance and unsanitary conditions have likewise contributed to make a high death rate. Indeed, practically every one of the causes alleged in various mines and various localities may be said to have been substantiated. In the South African mines, where the underground work of drilling, collaring, blasting and shoveling is carried on underground in quartzite and other quartz-bearing rock, the initial cause of the disease is sharp-edged

drill dust; and although the immediate and apparent cause of death may be an acute attack of pneumonia behind the pneumonia is an advanced stage of tuberculosis; and behind the tuberculosis is a pair of lungs raw and irritated because of the accumulation of millions of sharp-cutting particles of quartz dust.

The condition of the lungs, ingested and congested with quartz dust, is aptly termed silicosis. In the broad sense of the word silicosis might be called a disease, as well as a condition. The fine particles drawn through the bronchi and their ramifications during repeated inhalation finally insinuate themselves within the walls of the air vesicles of the lungs. The results are twofold. In the first place the accumulation of foreign matter prevents normal aeration; in the second place, the cutting and irritant action of the silicious particles brings about a fibrous growth which is nature's attempt to encyst them. This further reduces the power of aeration by diminishing the aerating surface. The advanced stages of silicosis are characterized by shortness of breath and labored breathing. A pair of lungs congested with silicious dust, raw and blood-shot is ready to catch anything; and tuberculosis is just behind the bat.

Pneumonia is common among non-aryan peoples. It is not a "white man's disease." The American Indian is mortally afraid of it. Whenever icy spicules float in the sunlit air he huddles himself within his wickiup and covers his head with his blanket. The experience of his ancestors has taught him that "poguenib weather" means death in the camp—death sure and swift. The old squaw shuns the wickiup where pneumonia exists and the medicine man is powerless. Pneumonia is less common among the native peoples of South Africa. It is prevalent among the underground miners among whom the acute forms of the disease are sometimes apparent. The chronic interstitial form of the disease is commonly associated with miner's tuberculosis and, so far as general appearances are concerned, closely simulates it.

Tuberculosis, however, may be considered a disease inherent upon civilization; and, when savage and nomadic peoples enter upon the employments of civilization and the methods of living attendant thereon, the death toll among them from tuberculosis is exceedingly heavy. In past years the white man's school for Indian children has been not much better than a death trap. Among the South African Negro miners, mainly Zulus, about the only well-trodden trail leading from the mine compound is that to the graveyard. The susceptibility of the Zulu to the disease, mainly of the fibroid type, is even greater than that of the Indian in confinement. The average span of life of the Zulu "boy" underground hitherto has been not materially greater than four years; in some of the mines it was less.

And the cause of the frightful mortality was dust—just plain dust.

The report of the Chamber of Mines puts the whole matter in half a dozen lines: "The silicotic lung is peculiarly liable to contract tuberculosis because of the relative stagnation of all its vital processes. There is no adequate defence on the part of nature and no check on the growth of the bacilli. Their poisonous excretion acts almost at once on the fibrous tissue of a silicotic lung, and the course of the disease therefore is extremely rapid." Could the matter of etiology be more clearly and forcibly expressed? Happily, the cause having been ascertained, the government and the mine operators have entered on measures, not of cure, but of prevention.

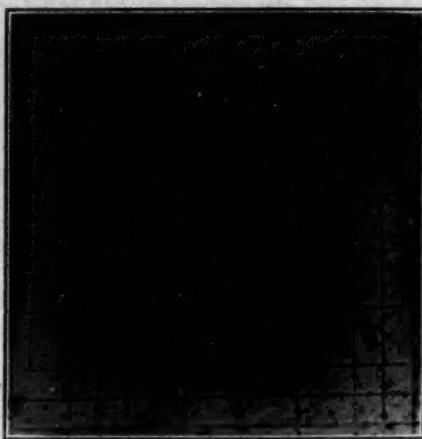


Fig. 1.—Silicious dust. The dark edges are due to the prismatic section of the edge, which scatters the light. Magnified about 200 diameters.

The physical character of the dust seems to be the chief feature of importance. There is enough resemblance between quartz and ordinary glass to draw an impressive comparison. One cannot break a piece of glass without producing an angular fracture. Subdivision does not eliminate the angles, or cutting edges; it multiplies them. Grinding the glass fragments in a mortar does not eliminate the cutting edges; it, too, merely increases the number. But if a stream of water be turned into the mass of glass dust so that the particles are in attrition upon one another, the cutting edges quickly disappear and the particles are finally worn down to forms that are nearly spherical.

The foregoing illustration applies quite as well to rock drill dust. Dry drilling produces silicious particles with cutting edges; wet drilling yields a pulp the particles of which possess dulled edges. In dry drilling a very considerable part of the fine dust is projected into the air, and is finally carried to remote parts of the tunnels and passageways. In wet drilling not much of it gets three feet from the drill hole. And so also in the various other processes of ore handling and blasting. Indeed, more than ninety-five per cent. of the dust is found to be preventable.

The report of Dr. Ogle to the Registrar-General, London, on dust conditions in the mines of England and Wales presents an interesting side light. Out of every 1,000 deaths of coal miners, 126 are due to miner's tuberculosis; but in the Cornwall tin mines 690 out of every 1,000 are due to tuberculosis. Out of twelve dust-producing occupations listed by Dr. Ogle, including woodworkers, masons, textile workers, potters and metal grinders, the mortality from tuberculosis among the Welsh coal miners is lowest; that of the Cornish tin miners is highest.

Dr. Ogle has expressed his belief that the microscopic character of the dust in anthracosis explains the problem of innocuity. The particles of coal dust, he points out, are free from sharp points and angles. And this opinion seems to be corroborated by all the evidence thus far produced. Another fact may be considered also: Sulphur dioxide is present in most coal mines, and the nascent gas readily combines with the moisture to form sulphurous acid. The free acid is a powerful germicide and possibly it may serve to destroy the tubercle bacilli that are present in most underground passageways.

The size of the dust particles found in silicotic lungs

invites thoughtful consideration, especially when compared with the dimensions of blood corpuscles and tubercle bacilli. Practically all of the particles lodged in lung tissue were less than three or four microns. (One micron = .001 millimeter, or .00004 inch.) In other words, the particles average about half the diameter of a blood corpuscle, and the greatest dimension is about the length of a tubercle bacillus. A discussion of this coincidence is for the physician rather than for the layman.

The commission appointed by the Chamber of Mines certainly prosecuted the work with thoroughness. A test of the use of many types and kinds of respirators demonstrated that respirators were useless. If breathing through them was unimpeded, they failed to arrest the dust. Indeed, in several instances the air passages of the respirator permitted particles one hundred microns in dimension to pass freely. The relation in size of a particle one micron in dimension compared with a particle one hundred microns may be expressed by comparing a baseball with the dome of Grant's tomb; it is the ratio of one to one million. The persistence with which dust remains suspended in the air was also a matter of experiment and measurement. The time required by falling particles in still air seems to have been very carefully worked out. Released at the height of the drive the following table shows the length of time required for particles of varying sizes:

10 microns.....	3 min.
5 "	13 min.
4 "	19 min.
3 "	33 min.
2 "	1 h. 25 min.
1 "	5 h. 30 min.

In the experience of this laboratory there is no room for doubt as to the accuracy of these figures. With the humidity at 40%, the smallest particles observable with a 1/6 objective require from six to ten hours to fall a distance of eight feet. This result, however, must be regarded only as an approximate. In my own work I find that the electrification of dust particles has much to do with the time required in falling, and this, in

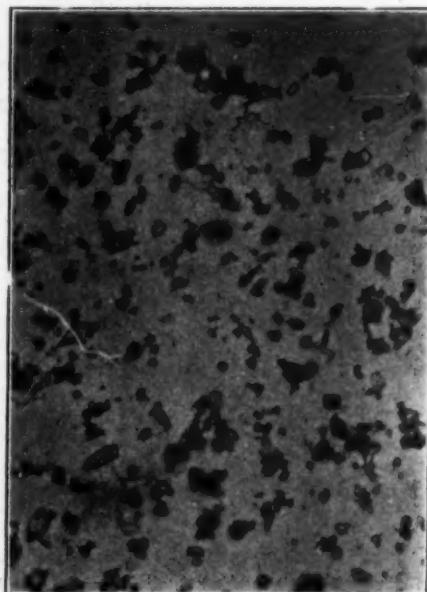


Fig. 2.—Dust removed from a silicotic lung. Magnified about 1,000 diameters. The petrologist will recognize the mineralogical character of the dust particles by the manner in which the light is scattered.

turn, is governed by the humidity of the air. A dust particle will discharge its load of electricity much more quickly in moist than in dry air; and, when discharged, settles more rapidly. No figures are given to show the humidity in the mine passages, but it is probable that neither the relative nor the absolute humidity varies much; most likely it is high.

It is evident that, as subdivision proceeds, the weight of a particle decreases in greater ratio than does its surface, and inasmuch as the electric charge of the particle resides on its surface, a condition may be reached in which the repellent force of the earth balances the attraction of gravitation. Therefore, either within or without the passageways of the mine, the air cannot be made wholly free from dust; but, by devices that are neither complicated nor expensive, the air of most mines can be made as clean and innocuous as that of a June morning.

The report of the Chamber of Mines frankly admits that the effects of dust particles less than one micron in dimension are unknown to the commission having the investigation in charge. To this I am constrained to add: neither are they known to anyone else.

Meteorological Laboratory.

The Volunteer Medical Service Corps,

For the purpose of completing the mobilization of the entire medical and surgical resources of the country, the Council of National Defense has authorized and directed the organization of a "Volunteer Medical Service Corps," which is aimed to enlist in the general war-winning program all reputable physicians and surgeons who are not eligible to membership in the Medical Reserve Corps.

It has been recognized always that the medical profession is made up of men whose patriotism is unquestioned and who are eager to serve their country in every way. Slight physical infirmities or the fact that one is beyond the age limit, fifty-five years, or the fact that one is needed for essential public or institutional service, while precluding active work in camp or field or hospital in the war zone, should not prevent these patriotic physicians from close relation with governmental needs at this time.

It was in Philadelphia that the idea of such an organization was first put forward, Dr. William Duffield Robinson having initiated the movement resulting in the formation last summer of the Senior Military Medical Association with Dr. W. W. Keen as president—a society which now has 271 members.

Through the Committee on States Activities of the General Medical Board the matter of forming such a nation-wide organization was taken up last October in Chicago at a meeting attended by delegates from forty-six States and the District of Columbia. This committee, of which Dr. Edward Martin and Dr. John D. McLean—both Philadelphians—are respectively chairman and secretary, unanimously endorsed the project. A smaller committee, with Dr. Edward P. Davis, of Philadelphia as chairman, was appointed to draft conditions of membership, the General Medical Board unanimously endorsed the committee's report, the Executive Committee—including Surgeons General Gorgas of the Army, Braisted of the Navy, and Blue of the Public Health Service—heartily approved and passed it to the Council of National Defense for final action, and the machinery of the new body has been started by the sending of a letter to the State and County Committees urging interest and the enrollment of eligible physicians.

It is intended that this new corps shall be an instrument able directly to meet such civil and military needs as are not already provided for. The General Medical Board holds it as axiomatic that the health of the people at home must be maintained as efficiently as in times of peace. The medical service in hospitals, medical colleges and laboratories must be up to standard; the demands incident to examination of drafted soldiers, including the reclamation of men rejected because of comparatively slight physical defects; the need of conserving the health of the families and dependents of enlisted men and the preservation of sanitary conditions—all these needs must be fully met in time of war as in time of peace. They must be met in spite of the great and unusual depletion of medical talent due to the demands of field and hospital service.

In fact, and in view of the prospective losses in men with which every community is confronted, the General Medical Board believes that the needs at home should be even better met now than ever. The carrying of this double burden will fall heavily upon the physicians, but the medical fraternity is confident that it will acquit itself fully in this regard, its members accepting the tremendous responsibility in the highest spirit of patriotism. It will mean, doubtless, that much service must be gratuitous, but the medical men can be relied upon to do their share of giving freely, and it is certain that inability to pay a fee will never deny needy persons the attention required.

It is proposed that the services rendered by the Volunteer Medical Service Corps shall be in response to a request from the Surgeon Generals of the Army, Navy, Public Health Service, or other duly authorized departments or associations, the general administration of the Corps to be vested in a Central Governing Board, which is to be a committee of the General Medical Board of the Council of National Defense. The State Committee of the Medical Section of the Council of National Defense constitutes the Governing Board in each State.

Conditions of membership are not onerous and are such as any qualified practitioner can readily meet. It is proposed that physicians intending to join shall apply by letter to the Secretary of the Central Governing Board, who will send the applicant a printed form, the filling out of which will permit ready classification according to training and experience. The name and data of applicants will be submitted to an Executive Committee of the State Governing Board, and the final acceptance to membership will be by the national governing body. An appropriate button or badge is to be adopted as official insignia.

The General Medical Board of the Council of National Defense is confident that there will be ready response from the physicians of the country. The Executive Committee of the General Medical Board comprises: Dr. Franklin Martin, chairman; Dr. F. F. Simpson, vice-chairman; Dr. William F. Snow, secretary; Surgeon General Gorgas, U. S. A.; Surgeon General Braisted, U. S. Navy; Surgeon General Rupert Blue, Public Health Service; Dr. Cary T. Grayson; Dr. Charles H. Mayo, Dr. Victor C. Vaughan; Dr. William H. Welch.

Arterio-sclerosis and chronic interstitial nephritis are frequent complications of obesity, and in time recoil on the heart and eventually on the obesity.

Why have we no reports upon Rogers' suggestion of calcium permanganate as an intestinal antiseptic? We have all accepted his discovery of emetin.

**PERSONAL HISTORY OF APPLICANT FOR APPOINTMENT IN
THE MEDICAL RESERVE CORPS, UNITED STATES ARMY.**

Give your name *in full* (including your full middle name):.....

The date of your birth:..... The place of your birth:.....

When and where were you naturalized (if of alien birth)?

Are you married or single?..... Have you any children; if so, how many?.....

What is your height in inches?..... Your weight, in pounds?.....

Give the nature and dates of all serious sicknesses and injuries which you have suffered:.....

Do you labor under any mental or physical infirmity which could interfere with the efficient discharge by you of the duties of a medical officer?

If either parent, or brother, or sister has died, state cause and age in each case:

Do you use intoxicating liquors or narcotics; if so, to what extent?

Have you found your health or habits to interfere with your success in civil life?

What academy, high school, college, or university have you attended? State periods of attendance from year to year, and whether you were graduated; giving date or dates of graduation:

Name any other educational advantage you have had, such as private tuition, foreign travel, etc.:

Give all literary or scientific degrees you have taken, if any, names of institutions granting them, and dates:

With what ancient or modern languages or branches of science are you acquainted?

When did you begin the study of medicine, and under whose direction? His residence?

How many courses of lectures have you attended? Names of colleges and dates:

When and where were you graduated in medicine?

(Fill this out and send it to the Surgeon General, U. S. Army, Washington, D. C.)

Have you been before a State Examining Board? If so, state when, where, and with what result:

Have you had service in a hospital? If so, state where and in what capacity, giving inclusive dates of each kind of service:

What clinical experience have you had in dispensary or private practice?

Have you paid particular attention to any specialty in medicine; if so, what branch?

What opportunities for instruction or practice in operative surgery have you had?

Have you previously been an applicant for entry into the United States service? If so, state when, where, and with what result:

Are you a member of the organized militia? If so, state with what organization and in what capacity.

Have you been in the military or naval service of the United States? If so, give inclusive dates of service with each organization, designating it:

In case of war or threatened war, will you accept active service for duty with the Army, should your services be needed?

What occupation, if any, have you followed other than that of student or practitioner?

Present or temporary address:†

Permanent residence:†

I CERTIFY that to the best of my knowledge and belief the above statements are true.

Signature

Date, , 191

Subscribed and sworn to before me, this day of A. D. 191

[SEAL] [Signature and official title.]

†The candidate should give his present address for correspondence, and also his permanent address to which he desires commission sent should he be appointed.

MEDICAL TIMES
July 1, 1917

FORM 146
W. D. S. G. O.
(Revised March 6, 1912)

....., M. D.

OF

....., 191

FURNISHES PERSONAL HISTORY

IN CONNECTION WITH

APPLICATION FOR APPOINTMENT

IN THE

MEDICAL RESERVE CORPS, U. S. ARMY

....., *Indorsements*

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NEW YORK, APRIL, 1918.

An Opportunity for Young Medical Men.

Many hospital interns will conclude a year's hospital service within a short time. To this class of men, an especial appeal is made to join the Medical Reserve Corps, U. S. Army.

They have had the advantages offered by hospitals for clinical experience, and the Government now offers them the added opportunity of serving their country and, at the same time, of improving themselves professionally by going into the Army.

The Provost Marshal General has announced that the next draft will take in 800,000 men, which means an enormous increase in the number of medical officers. Much of the routine work in the camps will fall to younger medical officers, and they will have an unusual chance to gain a very wide experience in physical diagnosis, the practice of medicine and surgery. It is difficult to believe that any red-blooded young medical man will let this opportunity go by, and we appeal particularly to them to avail themselves of this service.

The older men must not forget, however, that their services must necessarily be utilized in the more important positions in the camps. As time goes on, the requirements of the Army become greater, there will be a vast number of places which must be filled by those who are now in civil practice today. If a country is worth living in it is worth fighting for, and one cannot endorse the kind of patriotism of those medical men who find they cannot afford to take up some form of Government work. It does not mean that every man must wear a uniform, because the work of the Local Boards is of the most important nature, and a man who is giving his time to this important service is serving

his country well, but we desire to emphasize the necessity of medical men getting together and offering themselves to the country which has nurtured them, in the belief that every true disciple of Aesculapius wishes to don the armor and do his part in fighting the battles of his country.

Dr. Bowler As An Editor.

Dr. John W. Bowler, Professor of Physical Education and Hygiene, and Director of the Gymnasium at Dartmouth College, has accepted the position on the Board of Contributing Editors made vacant by the death of Dr. Thomas D. Crothers.

Dr. Bowler is one of the best known men in his field in the country. He began his teaching work in 1889, as an assistant to another member of our editorial board, Dr. Dudley A. Sargent, at the gymnasium of Harvard University and he has been connected with Dartmouth College since 1901. In addition to his splendid work in that venerable institution, Dr. Bowler has at Bowler Farms, Marlboro, Mass., an institution for the treatment of persons suffering from neurasthenia and allied conditions, where outdoor life plays a particular part in treatment.

The addition of Dr. Bowler to the editorial board will give our readers the advantage of the writings of a man who stands in the forefront of specialists in physical education in the United States.

Civil and Military Mortality.

In the course of a recent interview Surgeon General Gorgas is represented as forecasting the probable death rate among our soldiers at the front on the following basis: "By 1916 the French had reduced their mortality to only about 2 per cent. for twelve months! That is a rate of only twenty per thousand. Even in civil life a rate of thirteen to fifteen per thousand is usual. Therefore it is evident that the additional war risk is surprisingly low."

But the war mortality is the mortality of a special group made up of young men for the most part, representing the best physical types of the nation.

While the Surgeon General's words were intended to reassure anxious relatives and friends of our fighting men, the point of view seems rather naive.

Our Greatest Sex Fallacy.

Great emphasis has always been laid by social philosophers upon the handicap which maternity imposes upon women who wish to participate upon equal terms with men in the larger life. It is always represented as a special drawback to which man possesses nothing comparable. He is always pictured as a relatively free agent, possessing no hampering defects or troublesome functions. We believe this point of view to be faulty.

The narrow type of feminist, interested chiefly in the feminism of the market place, regards maternity as something that must be reduced to pretty low terms by the woman who essays to compete with men in the world of affairs. It is such a fatal handicap, in her view, that she who would succeed in winning an important place in society must resolutely put it aside. But the narrow feminist does not see that man has to do much the same thing, as we shall endeavor to show. In fact, few seem to see the identity of the two problems.

Now, we submit that the sexual urge of the young and vigorous man is quite a nuisance, particularly when the exigencies of our civilization preclude its gratifica-

tion. Between the will power, distracting devices and involuntary emissions that enable the clean young man to solve his problem after a fashion, masculine youth certainly finds itself severely beset.

Throughout life, for most vigorous and decent men, there is constant fencing with their tremendous sexual endowment. He who fails to develop facility in sublimating his sexual energies into creative channels finds himself going to the wall. Considered purely from a biologic standpoint, monogamy is an almost incredibly absurd system, serving only to mock and set at naught the powers of vigorous and imaginative men. It fits in very well, however, with a civilization and a culture which provide innumerable avenues for artificial sublimation and the vicarious dissipation of energy. Nevertheless, what does all this mean but the presentation of a problem to man solution of which calls for just as much ingenuity as does the problem of maternity for ambitious woman?

Man, between his funny little domestic entourage and his sublimations, manages to achieve success in life with reasonable frequency. This strain comes after the stormy struggle of youth with titanic sexual forces. It is only when he reaches a point where the sexual forces begin to wane that the man of great abilities finds his faculties properly trained for creation. And what has he really done? He has converted a handicap into an asset. Instead of a consummate satyr you have a Leonardo Da Vinci. You cannot be the former in our world of respectable conventions, civic exactions, and artistic conscriptions; Leonardo released himself completely from the sex urge in its ordinary forms and became the most versatile genius of all time. We might as well—all of us—be Leonards, for, alas! we cannot be satyrs.

Let us have an end of the doctrine that the ambitious woman who is obliged to fence with the forces that would impose maternity and hence competitive failure upon her is confronted by a specially severe sexual trial. It is no greater than the strain that man is under to keep a ring in the nose of the glorious beast that relentlessly rises up within himself.

Why Neo-Listerism?

The antiseptic method of treating wounds seems like a reversion to Listerism in a certain sense. It appears to be a going backward that is curious to the medical spectator and more or less problematical to the operating surgeon.

Some of us have dared to suspect that the ingenious methods of cleansing infected war wounds now in vogue have had very much to do with the excellence of results —more than the chemicals employed.

We note that Sweet and Hodge are very circumspect in closing wounds antiseptically treated by the new method. They state that they have practised secondary closure in but few wounds treated by them, since they believe that secondary closure represents a surgical problem that is not solved by the mere ability rapidly to sterilize a wound. They made smears and cultures of fifty-one wounds treated by them and found thirteen actually sterile after from eight to twenty-one days of the orthodox treatment; six were "clinically sterile"; twelve others classed as clinically sterile yielded cultures showing numerous colonies. They are unprepared to subscribe to the dictum that secondary closure is always the best surgical practice.

The thought that we cannot repress in this connection is that this procedure should have been put forward as an advance in asepsis, and we venture to say that that

will be its final appraisement. Cleansing by the new method without antiseptics, and healing at a reasonable and safe rate without the exceptionally possible closure stunt, would seem to us to constitute a sufficiently glorious thing without going back to that which, while it made possible the development of modern surgery, belongs strictly among the honored achievements of the past. Had the procedure been put forward upon this basis we are convinced that no controversies could have arisen and that its use would have been more extensive, to the benefit of many more of the maimed.

Biological Light on the Kaiser.

Although the weight of scientific opinion is against the transmission to progeny of characters acquired during the lifetime of parents, yet evidence is now and again introduced which seems to threaten Weismann's doctrine of the continuity of the germ plasm. For example, Guyer has demonstrated specific antibodies in the domestic fowl following injection of an extract of the lens of the field mouse's eye. When the serum of such a fowl was injected into a pregnant field mouse the progeny revealed partially liquified or partially opaque lenses.

The significance of Guyer's work seems to be that more or less fortuitous things may occur at times in parents which result in the transmission of acquired characters.

Upon this rather flimsy basis we venture to say that it may yet be found, in exceptional cases, that things not reckoned on may occur in the foster children of wet nurses, representing a phase of transmission, either of inherent or acquired characters.

Since Guyer has shown that it is possible to influence a mother in such a way as to produce something in the progeny obviously and specifically related to the source of the influence, it would seem reasonable to postulate possible happenings when a child is biologically associated with a mother, not so intimately as in intrauterine life, but nevertheless closely.

It would seem that we have glimmerings of a rational insight into certain matters heretofore relegated to the limbo of popular superstition, and we are encouraged thereby to call attention to some data that may be relevant, having to do with the infantile life of the German Kaiser.

The Kaiser was suckled by a young Westphalian peasant woman. A son of this woman is said to have the same intent look as the Kaiser, the same kind of square head, and a chin that is decidedly reminiscent. Given a mustache of the sort affected by the Emperor, the resemblance would be rather striking. An amusing circumstance consists in the fact that the yokel foster brother of the Kaiser enjoys the same easy familiarity with God as his All Highness.

Certainly there are many things about the Kaiser that are strikingly plebeian. His essential vulgarity has been revealed at length by many writers familiar with his personal traits. We associate with him especially piety and an exceedingly bourgeois attitude toward the aspirations of women. The latter he has seemed totally unable to sense, and his famous opinion about the kitchen, the children and the church undoubtedly represents correctly his sincere feeling about the place and duty of women. He has never revealed any intellectual trait beyond cultivation by fortunately situated persons of the German peasant class. He is before everything else a *poseur*, without a single royal attribute.

There may be biological implications in all this; no one can say that there are not.

Miscellany

CONDUCTED BY ARTHUR C. JACOBSON, M. D.

War's Healthful Side.

We hear and read so much about shell shock, wounds, trench foot and all the other ills of war that it is refreshing to turn to a healthful side of the matter, as expounded interestingly by Crile. Major Crile thinks that when a man goes out from "the worries, responsibilities, anxieties and irritations of civil life to the peaceful pursuit of war," he is apt to be transformed in point of health and grit. Your flabby, nervous jelly fish, with indifferent powers of resistance, is changed by his soldier's life into a real man who laughs at things that would have finished him completely before he went into the army. And if it should happen that he is wounded his heightened resistance makes his chances of recovery far better.

Surgeon General Gorgas reports that many commanders state that their soldiers are in better health, even in the trenches, than our civilian population is at home. Fewer men on the battle line in France have colds than the people on Broadway. The same thing is true of more serious troubles. With one exception—venereal disease—there has been no widespread disease among the armies on the western front. "Thousands of our soldiers," says General Gorgas, "will come out of the army better men physically than they were when they entered it. More lives will be saved by preventive medicine and modern sanitation than will be lost in the actual fighting."

Many a sallow clerk is being transformed into a good specimen of physical manhood at the army camps and at the front.

In stressing the costly side of soldiering we should not lose sight altogether of the constructive side.

The Healing Touch.

The view is held extensively
That doctors indefensively
Are guessers as a class;
No principle foundational,
No basis international,
Controls the cult en masse.

Most of us superficially.
Would nod our heads judicially,
Concurring in the charge;
And yet from what I know of them,
I'd say it isn't so of them,
When taken by and large.

In keeping with the period,
I got to feeling very odd,
And sought a sage, in doubt.
He thumped me perfunctorily
And said somewhat cursorily,
"Right—pay as you go out."

He was, it seems, a swallowpath,
Or similar fal-lal-opath,
And as his den I fled,
"Perhaps," thought I, "the other school,
One of the younger brother school,
Can bring things to a head."

His countenance was critical,
His words were analytical
And left me all at sea.
"Um, hum," he muttered, "vascular—
Decidedly extrascular—
And fifteen is the fee."

Who'd gulp a pill or bolus down,
Should have it gilt and solus down
The gullet have it slid.

But if you had to buy the stuff
And gild it toe, you'd fly the stuff,
And that is what I did.

I tried one chiropractical,
His manner was didactical,
He bared me to the breeze.
And chanted low crepuscular
Remarks: "Your trouble's muscular,
Ten dollars if you please."

Then came a dermatologist—
Or was it metabologist?
My memory's not clear
Just how he did discriminate.
Would, too, I might eliminate
That bill, sad souvenir!

And thus from door to door I strode,
And ever as the more I strode
My pockets lighter grew;
Till from the exercise I got
(Perhaps a little wise I got)
My fancied illness flew.

But it appears essentially
Established, evidently,
As I set out to show;
A fixed peculiarity,
A sameness, sureness, parity,
Does mark the medico.

—MAURICE MORRIS in the Sun.

Hygienic Birth Control.

Now that the Court of Appeals has decided that birth control is not a matter for rag-tag and bobtail ministration and administration it clearly behooves the reputable wing of the profession to establish clinics for hygienic birth control advice.

The language in which the court's decision is framed leaves no doubt as to the propriety of scientifically informed and well intentioned physicians giving information as to birth control to selected cases. The indiscriminate dissemination of birth control information is, in the view of the court, an offense against public decency and altogether indefensible, but the distinguished jurists recognize very clearly that there are cases in which contraception is properly regarded by the existing law as a humane and justifiable practice, when applied by reputable physicians upon scientific indications.

If, in view of the Court of Appeal's decision, we fail to give properly organized succor to the class of cases concerned, we shall stand convicted of neglect and stupidity, and encouragement will be given to tinkerers and disreputable practitioners to continue their crude ministrations, and to yellow, malodorous agitators to perpetuate their verbal and printed wheezings and their sickening laudations of themselves.

The decent requirements of our private patients are well looked after, and they constitute at present a privileged class in respect to birth control. On the other hand, the sexually exploited women among the poor are not properly advised and instructed.

We venture to express the opinion that an endowed institution for the application of hygienic birth control to such among the poor as stand in legitimate need of it would accomplish far more practical good than any foundation now existing. Such an institution, administered by men of high standing in the profession, could exercise a wise control over undesirable parenthood as well as over the field of purely obstetric problems. Thus our largely theoretic eugenic principles would find practical application and our social workers realize that something constructive had at last materialized.

Will some generous little profiteer please pay heed and immortalize the Simpkins family name, while at the same time finding a good use for his ill-gotten gains.

The Diagnostic Laboratory

Conducted by CHESTER T. STONE, M. D.,
Brooklyn, N. Y.

Modification of Noguchi Test for Syphilis.

In using the Noguchi system Howard has found it of great advantage to sensitize the corpuscles with amboceptor before adding them to tubes containing patient's serum, complement and antigen. He snips strips of amboceptor paper into short lengths, enough to give a certain excess of amboceptor for the tubes needed. If, for example, ten tubes requiring two units each of amboceptor are desired, paper estimated to contain twenty-four units is used. These small bits of paper are placed in a centrifuge tube with 5 or 6 c.c. of normal saline solution and agitated every few minutes for thirty minutes to dissolve out all the amboceptor. The tube is then centrifuged for a short time to clear the solution of particles of paper, and the amboceptor solution is poured off into another tube. To this is added the corpuscles to be used in the tests at hand. If ten tubes, as for above example, 1 c.c. of a 10 per cent. suspension of washed human corpuscles is added and mixed thoroughly with a pipet. The mixture of amboceptor and corpuscles is next incubated for one hour. At the same time the rack of tubes containing the other components of the test is placed in the incubator for the same length of time, to allow fixation of complement if syphilitic antibody be present. At the end of the hour, or in less time, it is noted that the corpuscles in the amboceptor corpuscle mixture have dropped to the bottom of the tube and a few revolutions of the centrifuge packs them so tightly that the tube can be inverted in pouring off the saline without loss of a corpuscle. These sensitized corpuscles do not behave like normal ones, but are heavier and will begin to settle in a few seconds after being uniformly emulsified in saline. After pouring off saline which contains excess of amboceptor, sufficient saline is added to make exactly as many cubic centimeters of corpuscle suspension as there are tubes. The corpuscles are now thoroughly emulsified with a pipet and 1 c.c. added to each tube. Hemolysis is noted almost immediately in negative tubes and those containing no antigen. The most obvious advantage in the above procedure is exact control of amboceptor. By using an excess every corpuscle is certain to be completely sensitized while the excess is discarded.—(*Georgia Med. Asso. Jour.*, Sept., 1917.)

A New and Simple Method For Counting Blood Platelets.

A simple and easy method of counting blood platelets is greatly to be desired. The methods at present available are either too inaccurate or too difficult and time-consuming. The result is that platelet counts are not done as a routine and that our knowledge of their clinical significance is still rather meager.

The well known preservative effects of sodium citrate toward blood platelets suggested to us its use in counting them; and the obvious advantages of counting them in the same counting chamber as the red blood cells led us to devise what we believe to be the simplest and most accurate method.

This method has the advantage that it does not involve any additional step in a blood count, as the red cells are counted at the same time as the platelets. The trifling work required to count the platelets by this method should lead to the general adoption of the platelet count as a necessary part of a full blood examination.

The method consists of the use of 3 per cent. sodium citrate as diluting fluid. The blood is diluted 1:200 in the hemacytometer pipet as though for a red cell count, and a drop is put on the counting chamber cell in the usual manner. The counting chamber must rest for ten minutes before the count is made, to allow time for the platelets to settle to the level of the rulings. This is essential.

The platelets are counted in the same manner as red cells, and the calculation is the same except that for accurate work it is necessary to count at least twice as many squares, and when the platelets are diminished in number, three or four times as many squares as in counting red cells. The calculation then consists of dividing the total number of platelets counted by 2, 3 or 4, as the case may be, and then figuring as though counting red blood cells.

It is important for the beginner to learn to recognize platelets and to distinguish them by their size (which varies but little) and by their peculiar slightly greenish hyaline appearance, from granules or other foreign particles which may accidentally be present.

The count is made with the high dry lens (one-sixth inch is best) and preferably, though not necessarily, with a rather high power eye piece (No. 4, for example).

If desired, the platelets can be made to stand out more sharply by the addition of a stain to the diluting fluid. Cresyl blue (1:500) and methyl violet (1:500) are the best. The disadvantage of the stain is that the fluid has to be made up fresh each day, as a precipitate forms on standing. The addition of the stain, however, is by no means necessary.

We have used citrate solution in counting blood platelets for over two years, and have found that the results with it correspond closely in normal and pathologic cases with the results obtained by the Wright and Kinnicut method which we had previously used and considered the most accurate method then available.

The counts in normal cases have varied from 200,000 to 400,000. The lowest counts were in cases of purpura, in three of which we obtained counts of 1,500, 10,000 and 45,000. The highest count was in a case of pernicious anemia after splenectomy, 970,000.—(*Jour. A. M. A.*, Sept. 17.)

Test for Chlorine in Drinking Water and Its Application for Estimation of Chlorine Present.

One hundred c.c. of distilled water are placed in a Nessler tube, 1 c.c. of 0.1 per cent. benzidine solution in 10 per cent. hydrochloric acid are added and the mixture allowed to stand five minutes. The blue color which develops changes rapidly to a bright yellow. The color is compared with a standard. O-tolidine may also be used, and in some cases is preferable. The method will detect 0.005 p. p. m. of chlorine.—(*Ind. Jour. Med. Research*, 4, 797.)

Colon Bacillus Pyelitis.

Pyelitis in boys, although far more infrequent than in females, Graves says, is, from the standpoint of the individual case, possibly even more important. In the male subject the possibility of extension of infection through the lumen of the urethra may be excluded, and in the treatment of all cases the intestine is to be recognized and dealt with as the potential source of the disease. The possibility of the occurrence of unusual and severe systemic manifestations in well developed pyelitis should be better appreciated. The best routine treatment for pyelitis in children is the administration of sufficient alkali to render the urine alkaline and main-

tain this reaction. If hexamethylenamin is employed the formaldehyd excretion should be watched and the urine should be examined frequently, with a view of forestalling injurious effects on the kidney parenchyma. In all obstinate cases autogenous vaccine should receive a thorough trial.—(*Am. Jour. Med. Sci.*, Nov., 1917.)

Determination of Fat in Certain Milk Products.

A method for determining fat, including treatment of the samples, in such dairy products as ice cream, evaporated milk, malted, dried skim milk and similar milk products, is described. The procedure is similar to that followed when using the well-known Babcock test, but in place of sulfuric acid, mixtures of glacial acetic, sulfuric and nitric acids are prescribed. The fat is separated and read in a Babcock bottle—(*Oklahoma Agr. Exp. St. Bull.*, 114.)

A Substitute for Gloves.

By mixing a solution of the condensation product of formaldehyde and phenol with a solution of cellulose-esters a product is obtained, provided the proper solvents are used, from which can be precipitated a durable, impermeable, sterile and bactericidal covering for the hands. It has the trade name "manutect."—(*Muenchen. med. Wechschr.*, 63, 967.)

62 Pierrepont St.

Correspondence

The Pulpit's Distortion of Medical Matters.

To the Editor of the MEDICAL TIMES:

Under the above caption you have a leading article in the February issue which condemns, as "sleazy and weird" (sic), the logic of the Reverend John Haynes Holmes in considering war as a malignant disease which the pacifists are trying to cure. You try to disprove his claim by putting forth war as a cure, a remedy "against some social disease." (What disease?) Does it not occur to you that neither the Reverend's statements nor your own are in any sense arguments. They are both beautiful, and more or less incorrect, similes and one is quite at liberty to extend them as far as he likes. However, they prove nothing. For instance, as to the inability of the pacifists to distinguish between a disease and a remedy—simile again in place of fact—we are quite free to compare a dangerous and ineffective remedy with, say, an infecting microbe, and plead for its abolition. The fact that the pacifists wish to abate other evils such as profiteering, imperialism, child labor, and so on, does not justify the statement that they are waging "bloody war" against these evils. The term "war" is here used in analogy and every analogy is lame. The odds, if any, seem to me in favor of using the term cancer for war and not for peace.

You say that war is invoked as a remedy for a social disease and that just now the disease is Germany. That is quite satisfactory as far as it goes, only it does not go very far. Germany is wielding the same beneficent "remedy" against us and our Allies. She evidently considers our just and righteous war for the democracy of the world as the "cancer" and proceeds to extirpate it. And there you are. What is sauce for the goose is sauce for the gander. Wars have been waged since time immemorial, and always with some lying excuse. The best promise of eventual lasting peace is given in the fact that one after another the lying excuses have failed and been shelved. Thus religion and the prestige of the church, national honor, manifest destiny, self defense. The latest, was justified as politico-social therapeutics, is no better.

PERCY FRIDENBERG.

Editor's Note—The combative spirit of man is bound to express itself somehow. Note our esteemed correspondent's declaration of war upon our phrase "sleazy and weird."

In order to prove our own common humanity, in respect of combativeness, we cannot forbear calling attention to Dr. Fridenberg's (sic), which should always be in brackets and italicized—[sic].

We are speaking facetiously.

Seriously, however, we hope that friendship and not war will grow out of our differences. Individuals and nations can proceed alike in such matters if there is a saving sense of humor somewhere.

War Activities

Army Plans 81,269 Beds for Sick and Wounded Soldiers.

A total of 81,269 hospital beds, for American soldiers, all within the borders of the United States and not taking into account the hospital accommodations of the Expeditionary Force in France, is the plan of the Surgeon General. The total expenditure on this great hospital program will be \$80,000,000, as now estimated. Today the government has 41,720 beds available for sick soldiers in the United States, which is considered by medical experts of the army to be entirely insufficient to take care of the men in the camps and cantonments, as well as those who will be returning in considerable numbers from abroad, crippled, wounded and diseased.

Facts show that the army officials made too low an estimate of the necessary hospital accommodations at the cantonment, says the *Brooklyn Eagle*. It is now planned to practically double these accommodations, as well as to establish sixteen general hospitals or groups of hospitals in various parts of the country, the latter primarily to care for the sick and wounded who are sent back from France. In addition to that the army wants to provide, within the United States, from 5 to 10 per cent. of hospital accommodations for the soldiers in France. This is to take care of the returning sick and wounded. With the Expeditionary Force abroad there is a hospital bed capacity of 20 per cent., which is entirely independent of the requirements at home.

The National Army cantonments were laid out with a total hospital accommodation of 15,000 beds, which experience has shown must be increased to 29,240. The National Guard camps had a hospital capacity of 11,240, which the Surgeon General's office wants to increase to 19,960. In addition to these cantonment hospitals there are numerous base and embarkation hospitals, some of them already government property, others built since the war began and others established in leased buildings.

Beyond all these the army has made plans for sixteen general hospitals, one to be located in each of the sixteen National Army and National Guard districts, which practically correspond in their boundaries. Each of these hospitals will have a minimum bed capacity of 1,000, with a maximum of from 3,000 to 5,000. At first these general hospitals will be chiefly employed in taking care of the overflow cases from the cantonments. Their ultimate purpose, however, is to care for the men who come back from France.

In doubling its present army hospital equipment the government wants to be independent, so far as possible, of the civil hospitals of the country. Last spring a survey was made of the accommodations at civil hospitals, both public and private, throughout the United States, with the idea of learning how many beds could be made available to the army on a twenty-four hour call, a forty-eight hour call, a week's call or a month's call. The army learned that it could obtain 20,000 beds on short notice and about 48,000 beds on a week's notice. But while this actual bed capacity was theoretically available a large part of it could not be utilized in practice, because of the remoteness and inaccessibility of many of the hospitals from military points.

Cantonment hospitals thus far have cost at the rate of \$800 per bed for establishment, but as extensions are made this cost will be reduced to about \$700 per bed, it is now estimated. Many special types of hospitals are provided for in the army plans. There will be a number of tuberculosis hospitals, as well as hospitals for mental cases. In addition, there will be a hospital for the blind and one for the treatment of defects in hearing and speech. A neurosis hospital and an epileptic colony will also probably be necessary, as well as one for the exclusive treatment of meningitis cases. Supplementing all these lines of special work the army is now conducting at all cantonments psychological examinations of officers and men, with a view to weeding out those who are temperamentally or mentally unfit to make good soldiers, so that they will not be sent abroad, only to break down.

50,000 More Hospital Beds Are Needed to Cope With Tuberculosis Problem.

At least 50,000 more tuberculosis hospital beds will be needed in the United States within the next two years to make possible the adequate control of the disease and check its tendency to increase its ravages under war conditions as it has in Europe during the last three years, says the National Association for

the Study and Prevention of Tuberculosis. There are 43,000 beds available in the country at present.

This estimate is based on a revised conception of the prevalence of the disease as the result largely of the examination of recruits and drafted men for our new army and navy. Until recently it was estimated that for every death from tuberculosis in the country there were five active cases of the disease. It is now believed that the true ratio is twice or three times as great. Instead of about 1,000,000 active cases in the country there are probably between two and three million.

"This does not mean that there has been any such increase in tuberculosis," says the Association. "It does mean that we have evolved new and more accurate methods of measuring it, with corresponding possibilities of more complete control. In the military medical examinations so far, an average of about two per cent. of the men of draft age in the country at large are found to be tuberculous.

"These results are corroborated by unofficial deductions from the records of the first year of the community health demonstrations being carried on at Framingham, Mass., by the National Association. Framingham was selected for this work as being a typical average American community. So far 5,000 people, or about one-third of the population of Framingham, have been rigidly examined, including all classes from mill-workers to well-to-do commuters. Out of these approximately 160 definite cases of tuberculosis have been discovered. Framingham has had for some time an average annual death list of 15 from tuberculosis. If not another case of the disease should be found on examining the rest of the population, this would give a ratio of disease to death twice as large as formerly estimated.

"While the directors of the Framingham work refuse to draw any official conclusion from the figures so far obtained, they admit that above deductions are conservative. The object of the work there is to demonstrate that any community by proper methods can determine the exact number of cases of this disease within its borders and by getting these cases under control eventually stamp out the malady."

The Next Liberty Loan and the Citizen's Double Duty.

It is every citizen's double duty to produce more and consume less, not only that he may have greater individual savings with which to invest in the Government's securities, but also that he may help to increase the aggregate of labor and materials (the war surplus) which the Government may purchase with the proceeds of these securities.

To inspire the average citizen with zeal for his two-fold effort, to justify to his mind his unaccustomed sacrifices for the common good, it is highly necessary always that his realization of the issues involved in the war be strengthened and that on the one hand he should visualize more perfectly the power, ambition, cruelty and arrogance of the enemy, and on the other the vastness of his country's needs, its tremendous preparations and the heroism and self-sacrifice of its defenders.

But aside from his general acceptance of the principles involved in the war and the necessity of its vigorous prosecution the man in the street is interested in seeing how his money is being spent. He wants to know how much of a cog in the mighty wheel his bond subscription is, what the items of military equipment cost, the amounts needed, the progress of the army and navy, and the efforts of the Government executives to get the most and best in the quickest time with the money he has intrusted to them. And especially he would like to know how the vast sums being advanced to the country's allies are benefiting his own country.

The lesson of thrift is not easily forgotten individually or nationally. As an incidental result of the war the bond buyers of the country will have expanded from a small minority of its inhabitants to a majority of its adult population. We shall have become familiar with safe investment and have learned the language and practice of thrift. And for the first time we shall practically all of us have had a direct stake in the conduct of the Federal Government, with an incalculable effect on the progress of good and economical government in the future. Individually we may be transformed in great part from a nation of spenders and borrowers into one of savers and lenders. And we shall all have had a training in some of the fundamentals of political economy.

Industrial, as distinct from agricultural communities, are easily circumscribed and easily wrought upon. In the one the problem of publicity is largely one of mob psychology, in the other of individual psychology. The industrial community readily adopts a fashion, each man depending upon his neighbor for justification. The farmer must be shown. Further-

more, the farmer is accustomed to thrift, but not to investment except in land, and as a law unto himself he is not easily impressed with governmental authority. He reads a special press, and the problem of reaching him should be intrusted to specialists. Yet the agricultural field, if cultivated intensively and with care can be made to yield a vastly greater return in bond subscriptions than heretofore, in the opinion of competent observers.

The problems of war finance, while not a subject capable of wide popular appeal, can nevertheless be made to yield some valuable articles for circulation among thoughtful people. The adjustment of war taxation. The balance to be struck between taxation and borrowing. The financial policies of the different belligerents. Past experience. These are all subdivisions of the subject anyone of which can be made to shed an interesting light on the present situation. The problems of war finance, while not a subject capable of wide popular appeal, may nevertheless be made to produce valuable articles of interest to thoughtful readers. A great many people, no doubt, would like to learn from an attractively prepared piece why the "pay-as-you-go" policy of war finance is neither desirable nor practicable beyond a certain point. This in turn raises the whole question of the adjustment of war taxes and their incidence, involving precedent and popular psychology, revenue production, the relative merits of old and new methods of taxation and its collection, of direct and indirect taxes, etc.

What proportion of the expenditures of government in war time shall be defrayed through taxation and what proportion through bond issues? This has been called the "crux of the matter." Authorities differ. Why? History can be made to produce a lot of colorful matter on this subdivision of the main subject, and very recent war history as well as that of the centuries gone by. Germany and Great Britain offer a striking contrast in the matter of their financial policies in the present conflict, illustrating most strikingly the tempers of the two peoples and shedding a bright light on their respective motives in entering the war.

These are only a few of the points in this large subject which immediately suggest themselves for journalistic or periodical treatment in connection with our own war finance policy and its whys and wherefores. There is a vast field awaiting exploitation in the probable consequences after the war of the different policies pursued by the belligerents. It is the consensus of expert opinion that our own policy is a sound and wise one and that our financial future is secure. But a great many people would like to be able to support their faith with explanations of the proper clarity and simplicity.

Diagnosis and Treatment

Electrically Heated Beds.

A warm bed is the most important matter for a patient suffering from pneumonia—Sir Dyce Duckworth quotes Sir William Gull as saying. And in view of the elaborate care with which most details of sick nursing have been worked out it is more than a little curious that the maintenance of the patient's warmth in bed should have been left so long to the precarious ministry of the hot-water bottle. If the aim is to maintain an even temperature it is obvious that any system of intermittent heating is very unsuitable for the purpose. Water has a high specific heat which, when contained in a badly conducting envelope, it parts with slowly, but at best with the rubber bottle the bed temperature is a constantly fluctuating quantity. Various efforts have been made to solve the problem by the use of a continuous electric current passed through suitable resistance, but these have failed for the most part in not providing for the wear and tear inseparable from bed-using and bed-making.

A successful solution has now been reached at the Treloar Cripples' Hospital, Alton, Eng., where two wards are now supplied with electric mattresses which have proved both safe and convenient in practice even when a child is the occupant of the bed. The mattress does not differ in appearance from any other except that a flexible wire enters it at the head end through a terminal which is flush with the surface and therefore not exposed to injury. The resistance wire is insulated by glass beads in flexible metallic tubing incorporated in the substance of the mattress. The mattress is differentially heated and the heating element is so disposed that the maximum warmth is generated at the foot end, less in the middle, and none at all at the head end. This distribution of heat is maintained in whatever position the mattress is turned, either from head to foot or side to side. The wires are connected with a switchboard on the wall at the head of a bed which contains

a variable resistance, so that the current can be graduated to any required extent. It is so arranged that when the current is full on the temperature of the bed is raised 25° to 30° F. above that which would obtain apart from the heating, and this has been found in practice to meet the needs of the small cripples, many of whom are fastened on splints which do not allow of the close contact of the bed clothes. A fuse prevents the passage of any current exceeding this amount.

Several of the usual difficulties have thus been met: the temperature of the mattress cannot rise to any dangerous degree, the tubing is so flexible that the mattress can be shaken or rolled up, and the resistance wire is waterproof in the spiral metallic tubing, so that no short-circuiting results, even if the mattress is wetted. The mattress may be sterilized in the ordinary way. The system is equally applicable whether the bed be in or out of doors. The saving of time at the Cripples' Hospital amounts to an aggregate of three hours a day in each ward where the electric mattress has replaced the filling of hot-water bottles, while inasmuch as the current required for maximum heating is only half an ampere at 110 volts, the total expenditure of energy for 200 or more beds would be by no means prohibitive. We believe that the general adoption of a similar appliance in hospitals and infirmaries would save much time and relieve the nursing staff of a tiresome routine. Electrically heated beds have already been found of advantage in the treatment of shock at field hospitals, and for military purposes it will be seen that the current required may be instantly supplied from a portable dynamo driven by a motor car attached to a field hospital. This is of especial importance in circumstances where water for hot-water bottles is not readily available and the means of heating the water required is limited.—(*Lancet*, Dec. 1, 1917.)

A Hitherto Unrecognized Cause of High Blood-pressure.

Edgar F. Cyriax, of London, says that among the various conditions which have been accepted as causes of high blood-pressure, we search in vain for mention of one which is very common, namely, irritative states of the erector spinae.*

Of these irritative states, there are three chief groups:—

- (a) Hypertonus,
- (b) Diffuse fibrosis or fibrosis,
- (c) Venous congestion,

all of which may exist, with various degrees of intensity, either locally or generally, alone or in combination.

The diagnosis of these conditions is not difficult when they are looked for:—

(a) Cervical hypertonus, if at all pronounced, is quite obvious, since it produces the short thick neck which for centuries has been associated with apoplectic tendencies. Pathological increase in the normal curve forwards in the lower cervical region is often met with, and is doubtless the result of the persistent muscular contraction. Hypertonus in the dorsal and lumbar regions is not so obvious. With the patient lying on his face, there should, normally, be no difficulty in relaxing the extensor muscles of the back, but in hypertonus this is often impossible or very difficult. If the patient is able to affect this relaxation, the slightest stimulus, such as a mere touch, will immediately induce a continued powerful contraction of the muscles mentioned. Changes in the normal curves of the back may be found; a common example is lumbar lordosis.

(b) Diffuse fibrosis or fibrosis is a frequent cause of so-called "rigid back," a condition whose importance has, in my opinion, been greatly under-estimated, for it is a potent cause, either primary or secondary, of disease. Its chief characteristics are limitation of movement, pain on attempting to move, and diffuse tenderness in the erector spinae. Under this heading also fall the well-known nodular thickenings of the neck, which are the cause of "muscular headache." These thickenings are readily defined by ordinary deep palpation.

(c) Venous congestion although usually only an accompaniment of (a) and (b), this may exist alone, and is often associated with a slight degree of edema. The commonest site for local edema is around the seventh cervical and first dorsal vertebrae, where a circumscribed swollen area may be found, boggy to the touch and not unfrequently showing radiating lines of small congested blood vessels.

The method by which these irritative states induce elevation of the blood-pressure is not difficult to trace. It is by means of a continued series of sensory stimuli to the posterior spinal nerves, in other words, by a never-ending series of pressor effects. If Nature is unable to compensate for these as they arise, an increase in the blood-pressure is the result.

* In this communication the term erector spinae will be taken as including the dorsal extensors from sacrum to occiput.

As regards the actual exciting cause of the irritative states of the erector spinae, there is one important group, which up to the present seems to have escaped recognition, i.e., anomalies of the vertebrae either as regards articulation or position. Synovitis of the vertical joints, especially the cervical, is much commoner than generally supposed, and so, too, are slight malpositions of the bones, which in their turn necessarily involve similar anomalies as regards their cartilages. In all these cases, slight multiple adhesions are frequent. The reason why these vertebral adhesions and synovitis are so common in the neck is, to a large extent, due to the fact that one is so seldom called upon to exercise the cervical muscles against resistance. The pathology of joint trouble from insufficient use holds good for the spinal column just as for articulations elsewhere.

From the practical point of view, the identification of the above-mentioned causes of high-blood pressure is of considerable importance. All treatment must be directed towards removal of the cause of disease, and in these cases, the best means—indeed, the only satisfactory one—is that which is described in the term "mobilization of the spinal column." By this is meant active and passive movements of the vertebral joints, passive manipulations (vibrations, petrissage, etc.) of the erector spinae, a suitable selection being made in each case.

Cyreax holds that if the cause of the elevation is partly or wholly to be found in irritative states of the erector spinae, no mechano-therapeutic program is complete without appropriate trunk and neck movements.—(*Practitioner*, Nov., 1917.)

Hallux Valgus.

E. S. Hatch does this operation for hallux valgus. A curved incision is made over the metatarsophalangeal joint of the great toe, with the base downward. The skin is dissected back and the bursa carefully removed. The head of the metatarsal is dissected free, and, with an osteotome, a cut is made half-way through the bone at right angles to the shaft, just back of the head. The osteotome is then removed and inserted in the center of the shaft and the inner half of the head chiseled off. Any rough edges that are present are then smoothed off. If the tendon of the extensor proprius pollicis is much shortened it is tenotomized or lengthened. This happens in a very small per cent of the cases. This leaves a good portion of the outside of the head to articulate with the first phalanx.

The joint has not been injured, and all of the projecting part of the head has been removed. The leaving of half of the head, with its articulating cartilage, makes a better joint than would be secured by taking off the piece of bone at an angle. The subcutaneous tissue is united by catgut sutures and the skin sewed with silk-worm-gut. A pad of felt is put between the first and second toes and a light plaster cast applied, including the ankle, to protect the foot. The stitches are removed on the tenth day and the patient allowed up about the twelfth to the fourteenth day. This operation allows the patients to be walking in two weeks, and in eighteen or twenty days they are able to put on any ordinary shoe. It is very important for them to wear a shoe with a straight inside last.—(*New Orleans Med. & Surg. Jour.*)

Myocardial Degenerations.

The acute myocardial changes following infections are generally attended by a more or less persistent increased frequency of pulse-rate, even while at rest, with a low blood-pressure—approximately 90 systolic and 60 diastolic, says Rousset. A diminished pulse frequency in these cases can be accepted as a normal result.

Rest, followed by gradual exercise, is of main importance, with the exhibition of tonic doses of strichnia. In acute myocardial degeneration, which sometimes accompanies syphilis, the question arises as regards the use of Ehrlich's salts. Personally, I am inclined to believe that the administration of mercury, either hypodermically, by inunction, or per os, is the safer plan to pursue provided we subsequently obtain repeated negative Wassermann reactions. If this does not follow, or if, in the rare instance, mercury cannot be given—as in a case of malignant precocious syphilis that I reported—comparatively small doses of the older salt should be given in preference to the new, and in these cases never by the intravenous method; and of course the subsequent use of mercury. These remarks apply with equal force to the cardiac cases which develop in the later stages of lues, with the addition of the iodides, which are often very useful.

In the chronic forms sufficient exercise should be permitted, short of producing heart strain—alternating, if necessary, with periods of rest in bed. This can only be determined by a careful study of the individual case. All excesses are, of course,

to be avoided. The food should be restricted to the necessary caloric value; meat diminished, and cooked in such a manner as to be most digestible. It is to be remembered that acute indigestion may cause death through the crippled heart. Liquids should not be taken in large quantities.

Attention to the condition of the bowels is of importance,—the regular use of an after-dinner pill, or an occasional mercurial purge followed by a saline, alternating from time to time with high rectal irrigation. In persons over weight the restriction of the use of fats, starches and sugars is often sufficient to cause a reduction and improvement of symptoms. Massage and medical gymnastics are especially useful in these cases.

The Oertel and Schott treatment are also useful in selected cases, and can be carried out at home with a trained attendant.

Digitalis, digalen, digapuretin, strophanthus and spartein sulphate are useful in the dilated group, but are to be used with caution with high tension. I frequently add tincture of aconite to one of the above with satisfactory results.

The intravenous method should be reserved for particular indications and extreme cases.

Most useful is the soda salt, which can be associated with either aconite or digitalis. They can be given in larger doses than usually recommended.

In the bradycardia group aromatic spirits of ammonia, 15 minimis every two or three hours, caffeine and small doses of strychnia. Diruetin is useful in the edematous cases and may be associated with infusion of digitalis. Also the combination of calomel, digitalis and squills. Oxygen is useful in attacks of dyspnea attended with cyanosis.

Morphine is one of the most useful of the hypnotics and is as free from danger as veronal. Atropine may be combined with it or given alone in the cases of heart block or those of pulmonary edema with a relative lowering of the blood-pressure. Adrenalin is occasionally of use in suitable cases. The rise in blood-pressure is prompt but soon followed by a corresponding decline; in certain conditions its use would be dangerous. Venesection may save life in an acute dilatation of the right ventricle.—(*Med. and Surg.*, Nov., 1917.)

Speech Correction.

Research in the psychology and physiology of speech correction, though begun some years ago by Gutzman in Berlin and carried forward by his pupils in various parts of America, offers a comparatively new and fruitful field to the medical specialist. The work being done in Boston under the superintendence of Dr. Walter B. Swift is of two sorts. First, there are the courses offered by him in the Harvard Graduate School of Medicine, covering the psychological, medical, educational and treatment aspects of speech correction. These courses last one month and comprise twelve lectures, each followed by an hour of clinical demonstration. Second, there is the work of the three or more speech clinics conducted by Dr. Swift in Boston. This is of a more practical nature and embraces research in the pathology of speech, treatment of speech defects, and the training of medical men and public school teachers in methods of speech correction. All physicians who have studied in these courses have founded clinics elsewhere and several of the graduate students have established teaching centers in other parts of the country. Funds are already available to the amount of \$20,000 for the founding of a speech laboratory in which all the research hitherto done in the clinics will be carried on under more favorable conditions.—(*Bost. M. and S. Jour.*, Dec. 6, 1917.)

Treatment of Hemothorax by Artificial Respiration.

Hess gives an account of the method of treating early cases of hemothorax by artificial pneumothorax. He contrasts the conservative treatment he followed in the earlier part of the war with the more active treatment he has now adopted in the field. He points out as defects in the earlier treatment of leaving the fluid untouched, the following facts: (1) The patient must remain for a long period in bed, as even sterile effusions of blood take much longer to absorb than ordinary pleuritic effusions. (2) Infection of the hemothorax fluid is very common. Hess has therefore recommended early withdrawal of the fluid by puncture, followed by the introduction of nitrogen or of air under controlled pressure. He describes his technique, the chief point of which appears to be that after withdrawing 50 c.c. of fluid by suction, double the volume of the gas is slowly blown in, so as to keep up a positive pressure and collapse the lung. Thereafter 100 to 200 c.c. of fluid are withdrawn, and double the volume of gas blown in to replace it. This quantity is removed again and again, and replaced by the gas, until no more fluid will flow. The lung, he says, may

be kept collapsed for as many days as appears necessary, by the reintroduction of nitrogen or air by means of puncture.—(*Muench. med. Woch.*, July 1, 1917).

Indications for Lumbar Puncture.

Barach says the indications for lumbar puncture are becoming more numerous. These indications may be divided into the diagnostic and therapeutic.

Lumbar Puncture for Diagnosis.

- I. Diagnosis in the infections.
- II. Diagnosis in conditions producing pressure symptoms.
- III. Diagnosis in traumatic conditions.
- IV. Diagnosis in miscellaneous conditions.

I. Diagnosis in the Infections.

- A. Cerebrospinal meningitis.
 - B. Pneumococcic meningitis.
 - C. Acute poliomyelitis.
 - D. Meningismus in the acute infectious diseases.
 - E. Meningitis complicating the infectious diseases.
- Typhoid fever.
Pneumonia.
Influenza.
Erysipelas.
Syphilis.
Tuberculosis.
Actinomycosis.
Trichinosis.

- F. Meningitis secondary to brain abscess, mastoiditis, sinus thrombosis.

II. Diagnosis in Conditions Causing Pressure Symptoms.

- A. Cerebral compression.
- B. Cord compression.

A. Cerebral compression.

- (1) Diseases of the cranium.
- (2) Diseases of the membranes.
- (3) Disease of the brain.
- (4) Hydrocephalus.

Inflammatory reaction.
Tumor.
Cyst.
Hemorrhage.
Aneurism.

B. Cord Compression.

- (1) Disease of the vertebral column.
- (2) Disease of the membranes.
- (3) Disease of the spinal cord.

Inflammatory reaction.
Tumor.
Cyst.
Varicosity of veins.
Aneurism.
Hemorrhage.

III. Diagnosis in Traumatic Conditions.

- A. Traumatism of head and neck.
- B. Traumatism of the vertebral column and spinal cord.

IV. Diagnosis in Miscellaneous Conditions.

- A. Unconsciousness in obscure cases.
- B. Hysteria.
- C. Epilepsy.
- D. Pernicious anemia with spinal cord symptoms.

Lumbar Puncture for Therapeutic Purposes. This is performed for the relief or pressure and for the introduction of medicaments.

Relief of Pressure.

- (1) Tumor.
- (2) Hydrocephalus.
- (3) Tuberculous meningitis.
- (4) Serous or aseptic meningitis.
- (5) Hemorrhagic internal pachymeningitis.
- (6) Choked disk and blindness of undetermined origin.
- (7) Meningismus of typhoid fever or other infections.
- (8) Chronic persistent headaches in neurasthenics.
- (9) Vertigo.
- (10) Traumatic neurosis.

Cerebrospinal Medication.

- (1) Cerebrospinal meningitis.
- (2) Tetanus.
- (3) Syphilis.
- (4) Chorea.

—(*Arch. of Diagnosis.*)

If the physician is out of debt, has a little home and a few acres of ground, he can be absolutely independent.—(*Bryce, Southern Clinic.*)

While ye're argufyin' with a fool, jes' figger thar's two on 'em.

Surgery

Local Anesthesia.

In discussing the advantages of local anesthesia, Col. C. R. Reynolds, U. S. A., observes that stovain has not established itself as superior to cocaine or other local anesthetics. Locally it is more irritating and causes to a certain extent a motor paralysis. It is this fact that makes its use in spinal anesthesia dangerous on account of the possible involvement of the respiratory muscles and higher motor centers.

Novocain is undoubtedly the best local anesthetic. Alone it has comparatively feeble anesthetic power, but combined with adrenalin or corresponding synthetic preparations, such as suprarenin, it makes the ideal local anesthetic. It is about one-tenth as poisonous as cocaine, absolutely unirritating locally, and its solutions can be boiled without deterioration. While it can be used in solutions as strong as 5 per cent, most surgeons use $\frac{1}{2}$ or $\frac{1}{4}$ per cent solutions, the former in the Mayo clinic and the latter in Crile's. The employment of these weak solutions has done more than anything else to advance the cause of local anesthesia. By the infiltration method as much as .600 gram (about 10 grains) have been used without poisonous effects. This means that with a 1/400 solution of novocain with suprarenin, you may use as much as desired, even more than 200 c.c.

The anesthetic property of novocain is said to be distinctly increased by potassium sulphate. Braun, who is one of the greatest advocates of local anesthesia in Europe, uses a 4/10 per cent solution of potassium sulphate in normal salt solution.

Novocain solutions must be carefully prepared, by first boiling normal salt solution made with distilled water for twenty minutes, the novocain crystals are added and the solution boiled again for ten minutes. The adrenalin is then added. The novocain-suprarenin tablets of Braun are supposed to be sterile. It is best, however, to sterilize the solution as the suprarenin is a synthetic preparation and is not affected by boiling. Fresh solutions should always be prepared for every operation. Novocain solutions are precipitated by free alkalies. Syringes and needles should, therefore, be sterilized in plain water; a matter, however, of little practical importance when using large quantities of the solutions. Alypin seems to be the favorite local anesthetic in genito-urinary surgery. By the use of tablet depositors the urethra may be anesthetized, or a 5 per cent solution may be injected into the urethra or the bladder. Solutions of alypin may be boiled for about five minutes.

Adrenalin and allied synthetic preparations greatly increase the anesthetic power of cocaine and novocain, but have little or no effect when used with beta-eucaine and tropococaine. By its vasoconstricting action it confines or incarcerates the drug in the tissues, lessens systemic absorption, and in addition seems to have a specific effect in promoting the action of the anesthetic, which has been likened to catalysis or the effect of a mordant or fixing substance. In the proportion of one part to a million it has this effect. One drop of a standard adrenalin solution, which is a 1-1000 solution in 20 c.c. of the anesthetic solution, will equal about 1-600,000. The synthetic substitutes can be boiled. Of these, suprarenin and arterenon are about the same as adrenalin. A later preparation known as homorenin is fifty times less toxic than adrenalin and in some clinics is used exclusively.

Plain water may be used for anesthetic solutions; but normal salt is preferable because, being isotonic, it neither gives to nor abstracts fluid from the cells or the nerve substance and therefore avoids the pain of the injection.—(Military Surgeon, Jan., 1918.)

Artificial Pneumothorax.

Charles L. Minor, of Asheville, N. C., reports on one hundred cases of pulmonary tuberculosis treated during the past four and a half years by artificial pneumothorax. He considers it a serious procedure and prefers not to use it on early cases where other effective means are available. Some otherwise hopeless cases have been saved. Of his one hundred cases, twelve were restored to health and working efficiency; in twenty life was prolonged with comfort and in some with working efficiency; in eleven no entrance was possible owing to adhesions in nine and to uncontrollable nervousness in two; thirteen gave negative results, and forty-four were failures, usually because of adhesions. There were two cases among the one hundred in which death was due to the artificial pneumothorax, in one because of a lung abscess which ruptured and in the other because of too rapid collapse. Of the one hundred cases sixty-nine were in the third stage and sixty-four had a doubtful, bad or hopeless prognosis.

Complications and sequelae:

(1) Adhesions: These are difficult to diagnose with certainty by any means. They are usually bilateral. For injection a spot should be selected where the percussion note is clear. It is best to inject only three hundred cc. at the first and second injections and to avoid high manometric pressures.

(2) Puncture of the lung: This may occur where adhesions are present. Air may then be injected into the lung, escaping per os or into a pulmonary vessel causing air embolism. If the punctured lung is infected the pleura may be infected when retracting the needle.

(3) Collection of fluid: In small amounts this may be disregarded. Large amounts are really dangerous because they may become infected by the needle, either from without or from a punctured infected lung. Removal of the fluid may cause adhesions to form. The replacement of the fluid by air may do good.

(4) Emphysema: This should be avoided because it troubles the patient. There is temporary pain. If high pressure is used the puncture opening should be strapped tightly with a cotton pellet.

(5) Nervousness: This may be extreme and uncontrollable and necessitate abandoning any attempt at artificial pneumothorax.

(6) Pain: This may be caused by touching the intercostal nerve and may be severe. It occurs oftenest when the puncture is made in the ninth interspace below the angle of the scapula. Therefore the author goes in laterally outside the nipple about in the anterior axillary line a point where one is also less likely to find bad adhesions.

(7) Dyspepsia: This may follow from pressure on the stomach from a right pneumothorax. It occurred in four of the one hundred cases.

(8) Excessively thin pleura: This may make it impossible to feel the passage of the needle and the puncture may leak. In such a case a patch of thickened pleura should be sought.

(9) Discomfort from excessive pressure: The author has not had rupture into the good side although such cases have been reported.

(10) Calcified pleura: One calcified en plaque will make the puncture impossible.

(11) Trying dyspnoea: This is rare and occurred in only five of the author's cases. In one gas was removed. In using small amounts of air and low pressure it need never be met. The only use of high pressure is to break adhesions, a doubtful procedure since it may lead to haemorrhage.

(12) Anorexia: This is rare and not serious.

(13) Waking up better lung: This is the most serious complication except air embolism. Indications are to remove gas and proceed more slowly or stop altogether. Blister over the waking up areas may be helpful. Prophylaxis consists in careful, initial, steady and slow procedure.

(14) Air embolism: This is the most serious complication.

(15) Heart puncture: This may occur when there are dense adhesions and the heart is displaced. The pain is agonizing. Of the "No Entrance" cases, 100 per cent. were doubtful, bad or hopeless.

Of the "Negative" cases 22 per cent. plus were good, or fair; 76 per cent. plus were doubtful, bad or hopeless.

Of the "Temporary Successes" 25 per cent. plus were good, or fair; 75 per cent. plus were doubtful, bad or hopeless.

Of the "Successes Still Getting Gas" 33 per cent. were good, 66 per cent. were bad.

Of the "Working Successes" 56 per cent. were good, or fair; 42 per cent. plus were doubtful, or bad.

Technique: The apparatus used was the Floyd Robinson, made by Codman and Shurtleff, of Boston. The manometer is rather too short. The needle is good. Every procedure should be controlled by the x-ray. It is important to follow the indications of the manometer. For convenience the author uses nitrogen rather than filtered air. Despite certain inherent dangers the procedure is not a dangerous one. However, it should be practised only by the experienced.

The method is applicable chiefly to cases that are moderately advanced, advanced, or chronic with or without exacerbations, and not too florid, acute, or incipient cases unless these last show signs of waking up. There is no definite guide as to the duration of treatment but after one year the advisability of removing the gas should be considered in order that the lung may not be kept collapsed too long. In careful hands it is a valuable measure in cases of haemorrhage or abscess. It is important to follow Forlanini's advice as to small amounts, slow injection and low pressure.—(Am. Rev. Tub., 1917, Vol. 1, No. 9.)

A positive Wassermann reaction, indicative of latent syphilis, is an indication for careful examination, lumbar puncture, and antisyphilitic treatment.

Mammary Neoplasms.

J. G. Sherrill says about 80 per cent of mammary neoplasms are malignant.

Factors which cause delay in applying to the surgeon are: (1) ignorance of the presence of the mass; (2) timidity and ignorance of the patient; (3) inattention on the part of the physician, and (4) the erroneous impression that cancer is hopeless.

Sherrill emphasizes the need for a simpler classification and suggests the following: (1) cysts, (2) tumors—(a) benign, (b) malignant.

Early diagnosis is of vital importance. The facts to be considered are:

1. Careful anamnesis.
2. Inspection of both breasts.
3. Palpation by placing the palm of the hand flat upon the breast and gently pressing the gland against the chest wall.

Characteristics of benign enlargements are:

1. They occur at any age, often in the young.
2. Slowness of growth.
3. Encapsulated and not infiltrating.
4. Mobile or fascia and under the skin.
5. Absence of glandular enlargement.
6. Usually painless except in neuralgia.
7. Most often occur in nulliparous women.
8. No retraction of nipple.

Characteristics of malignancy:

1. Occurs usually after the age of thirty.
2. The mass grows slowly and constantly if carcinoma; rapidly and spasmodically if sarcoma.
3. Carcinoma is not encapsulated and soon infiltrates; sarcoma is encapsulated at first and later infiltrates.
4. There is early attachment to the skin and fascia.
5. There is early glandular involvement.
6. Pain is not an early but a late symptom.
7. It usually occurs in women who have borne children.
8. There is retraction of the nipple.

The irregular outline and induration gradually merging into surrounding tissue is characteristic of scirrhus.

Sherrill advocates the Warren incision for benign growths. In radical operation he removes the axillary glands first and then the breast proper together with the pectoralis major muscle. Sometimes he leaves a few fibers of this muscle above the range of the lymphatics to secure greater mobility of the arm.

In his experience he has not had a local recurrence during the past ten years. The irritation of slow healing from separation of skin margins may favor recurrence. Nearly all his recurrences have been visceral. If radiography shows shadows cast by the mediastinal glands operation should be abandoned.—(*Internat. Jour. Surg.*)

Novocain Spinal Anaesthesia.

Leclerc says novocain spinal anesthesia has these advantages: (1) it facilitates the change of the patient's position on the operating table and easily permits abdominal decubitus; (2) there is preservation of the laryngeal reflex which prevents asphyxia and postoperative bronchopneumonia; (3) in laparotomy it avoids the thrust of abdominal viscera; (4) diminution or suppression of operative shock is the principal advantage.

The disadvantages are: (1) for some reason, or other there may be a complete failure to effect anesthesia; this is, however, very rare; (2) the anesthesia may be insufficient as regards intensity or duration or extent of field.

To justly appreciate lumbar anesthesia and the importance of the checks to which it is subject, it is necessary to carefully consider the dosage employed, the operative technique, and the points of injection, and the region in which the operation is to be done. As regards dosage the author employs three categories, i.e., less than 10 cg., 10 cg., and from 10 to 15 cg., the latter figure representing the maximum used; but the efficacy of anesthesia does not depend on the strength of the dose, as experience has shown that in some cases the stronger the dose the greater the proportion of failures.

The site of injection is the first or fifth lumbar space. The author uses both equally well. The higher level not effected by anesthesia differs for each patient and is not in agreement with the quantity injected. The most suitable level for spinal anesthesia seems to be the first lumbar or the twelfth dorsal space.

As complications, there may be slight nausea or vomiting or headache. In one case there was deafness and labyrinthine phenomena; in 6 cases rachalgia and meningitis; in 2 cases some strabismus. All these disappeared in the course of time.

Spinal novocain anesthesia, though not a method of absolute security, renders great service, especially in cases of shock and wounds of certain regions.—(*Lyons Chir.*, p. 497, 1917.)

War Medicine and Surgery

Low Temperatures and Shock in Wounded Men.

The occurrence of very low body temperatures after gunshot wounds is at present the subject of many investigations in connection with the study of the causes and treatment of shock; some facts recorded by S. Weil (*Muench. med. Woch.*, Sept. 11, 1917) on the subnormal temperatures frequently met with in wounded men are therefore worthy of note.

His observations relate chiefly to the period from December, 1915, to March, 1916, but they were continued during the summer months. In the region in which his experience was gained, owing to heavy artillery fire and bad roads, the wounded did not arrive at the main collecting station (*Hauptbandplatz*) until five to eight hours after injury. The arrangements were so defective that only the last part of the journey, about an hour in duration, was made in covered ambulances, in which the patients were well protected by clothing.

During the months mentioned he found that, whereas only slightly subnormal temperatures occurred in lightly wounded men in the first few hours, in many severely wounded cases the temperature on admission was well below 37° C. (98.6° F.), and in some instances ranged down to as low as 31° C. (87.8° F.). No details are given of the method of recording these temperatures, whether axillary, sublingual or rectal. His observations led him to believe that the low temperatures depended partly on weather conditions, but not so much on actual cold as on rain and long-continued wetting through of the soldiers' clothes. In February, for instance, the subnormal temperatures were not so extreme as in the rainy periods of December and March. Even in summer prolonged wetting produced a similar result. This observation has been made by others.

Weil states that, as was to be expected, the situation and severity of the wound also have considerable influence on the temperature. He observed very subnormal temperatures occur in any case which had suffered great loss of blood, especially wounds of the chest and compound fractures of extremities. He saw numerous cases of chest wounds, associated with hemothorax, in which the temperature on admission was 33° , 34° or 35° C. (91.4° to 95° F.). The two lowest temperatures recorded were 31° C. (87.8° F.) in a very severe grenade wound of the foot, and 31.6° C. (88.8° F.) in a man whose foot had been blown off, and who had lost a great deal of blood. Weil had the opportunity of studying the temperature in only two head cases; such injuries, apparently, went to some other hospital. The temperature on admission was in both 37.2° C. (98.9° F.).

Abdominal injuries, even when the patient was much colapsed and in bad condition, did not cause very subnormal temperatures, and no record below 36° C. (96.8° F.) was observed. He did not find the relation between subnormal temperatures and surgical shock absolute. In abdominal cases with severe shock the temperature might be little below normal, while very low temperature readings might be observed in men whose pulse and respiration were little changed.

As regards prognosis, Weil confirms the opinion that a very subnormal temperature is not of itself of bad import if operation be delayed until warmth is fully restored.

Cases of wounds of the spinal cord in the cervical region form a class apart. The temperature in such cases may fall so low that it is difficult to understand how life can exist. Other observers, especially Volkmann, have fully confirmed this statement. Volkmann described a case in which a man, wounded in the cervical spinal cord, lived for twelve hours with a temperature of 24.5° C. (76.1° F.) as recorded by the thermometer he used. In four other cases of wounds of the cervical spinal cord, temperatures of 26° , 27° , 26° and 26° C. were recorded, but there is no proof that the thermometer was correct. In another instance of cervical injury the man lived for five days with a temperature which, it is believed, never exceeded 28.3° C. (82.9° F.). The association of very low temperatures with wounds of this kind is so characteristic that a diagnosis of spinal cord injury may, it is thought, at times be made almost from this symptom alone. Weil records one such case, sent down as "hysterical paresis," in which the small entrance wound of a machine-gun bullet had been missed by the surgeon in the forward area. In one case of injury to the spinal cord Weil was able by intensive warming to bring up the temperature, within twenty-four hours, from 26° C. to 39° C., a change of 13° C., or 23.4° F., or so he believes!—(*B. M. J.*, Oct. 27, 1917.)

A Report on the Treatment of War Wounds With "Proflavine."

Capt. L. Colledge and five other British Army Officers make this report. Proflavine (diamino-acridine-sulphate) is a preliminary product in the manufacture of acriflavine or flavine (diamino-methyl-acridinium-chloride), and is therefore both easier and cheaper to make.

The cases described in this report have been under the care of the surgical officers of a Casualty Clearing Station and the bacteriological work has been carried out in a mobile laboratory. A solution of 1 in 1000 in normal saline was generally employed as a primary application, followed later by the use of a more dilute solution of 1 in 5000.

In all 43 cases were treated with proflavine; in a number of instances, however, multiple injuries were present, so that nearly 60 wounds are included in the series. It has happened that the series of cases has included a large percentage of very serious injuries, so that the test of the antiseptic has been a severe one.

A few illustrative cases are given:

A. Wounds of Joints.—Case 1.—Wound of the shoulder-joint with fracture of the great tuberosity of the humerus and very extensive muscle damage, necessitating removal of most of the deltoid muscle. The wound, after treatment with proflavine, was closed except for two small drainage-tubes. These were soon removed, and passive movements of the joint were begun on the twelfth day.

Case 2.—Wound of the knee-joint. The foreign body was impacted in the spine of the tibia, and lying so far back between the condyles of the femur that complete exposure of the joint cavity by cutting through the ligamentum patellae was necessary. The joint was sown up completely after washing out with 1 in 1000 proflavine. On the second day about 10 c.c. of sterile blood-stained fluid was aspirated from the joint. The wound healed perfectly and passive movements were begun on the thirteenth day after the injury.

Case 3.—A shell wound causing a compound fracture of the humerus, and opening up the shoulder-joint. The joint was extensively damaged, and the surrounding muscles were much lacerated. The wound was cleaned up as far as possible, but this proved very difficult. Large fragments of the upper third of the humerus were perforated removed, leaving a complete gap. The wound, which could not be closed, was treated with 1 in 1000 proflavine for the first four days, after which eusol was substituted. The wound is now healing quickly, and has never suppurated.

Case 4.—A wound over the right patella, comminuting the bone and opening the knee-joint. A flap was turned up so as to expose the whole joint in front, and the foreign body and the shattered patella were both removed. The joint was irrigated with 1 in 5000 proflavine, after which both the wound of entry and the flap wound were completely closed. Healing by first intention occurred.

B. Compound Fractures.—Case 1.—An aviator, shot while flying. A machine-gun bullet fractured the left tibia and fibula, causing also great destruction of the muscles of the calf. The posterior tibial artery was torn across, and ligatures were put round both artery and vein. The wounds were packed with gauze soaked in 1 in 1000 proflavine, and left untouched for 36 hours. No inflammation occurred and the patient was able to be evacuated to the base on the tenth day.

This case is noteworthy as being the most serious compound fracture of a leg which one of us has seen recover without amputation. The notorious frequency of gas gangrene in cases of this kind, where the posterior tibial vessel has been destroyed, must also be remarked upon.

Case 2.—A severe compound fracture of the femur. The site of fracture was exposed by joining the entrance and exit wounds, cutting through the vastus externus completely in the middle third of the thigh. Several large detached fragments of bone were removed. The cavity was washed out with 1 in 1000 proflavine, the muscle sutured with catgut, and the wound was then closed except for one Carrel tube inserted from the site of the entry wound. The Carrel tube was removed on the fourth day, no suppuration whatever having occurred. This patient was evacuated to the base on the sixth day after injury.

Case 3.—A gunshot wound of the forearm, causing compound fracture of the ulna and very considerable laceration of the surrounding muscles. The entrance and exit wounds were opened up and damaged muscle and fragments of bone removed. The wounds were irrigated with 1 in 1000 proflavine and thereafter completely stitched up except for a drainage-tube down to the bone, left in the anterior wound. The drain was removed on the following day, and both wounds healed by first intention.

C. Wounds Involving Blood Vessels.—Four cases occurred where large blood-vessels were injured. The injuries involved the axillary, brachial, and radial arteries on the same arm, and the superficial femoral vein and a large branch of the femoral artery on the same leg. In all cases the surrounding muscles were much damaged. It is sufficient to record that, after dealing with the vessels, all the wounds were completely sown up after treatment with proflavine, and all healed without the least trouble.

In the wounds treated by primary suture excellent results were obtained; in only one case out of 20 was it necessary to remove some of the stitches for drainage.

In some cases stitches were placed *in situ* at the time of operation and the wound left open with gauze packing for a day before the stitches were drawn tight. In all of these healing occurred as by first intention.

In wounds where primary closure was impossible owing to the amount of tissue removed the same set of changes occurred as were described for acriflavine. These changes were well seen in a case of amputation through the thigh and in some large wounds of soft parts. The surface of the wound became covered after a few days with a firm yellow pellicle and granulation tissue production was very slow. These wounds were then changed to other antiseptics, such as eusol. One case of gas gangrene occurred in the series and a full account of this patient will be given.

An officer was admitted with a severe penetrating wound of the chest

and severe shell wounds of the buttock. He was so much shocked on admission that nothing could be done for 12 hours. The buttock wounds were then drained and packed with gauze soaked in 1 in 1000 proflavine. The missile could not be found in any of the three buttock wounds. The patient remained in very poor condition, chiefly owing to the severity of the chest wound, and after 24 hours an acute gas gangrene developed in the buttock. A fatal issue rapidly ensued.

Apart from this case no example of spreading sepsis was met with in the whole series of cases.

The bacteriology of the wounds can be dismissed very briefly, as the results are identical with those described for acriflavine. The same persistence of infection with coliform bacilli in the later stages of the wounds was again very noteworthy, and pyocyanous infections were also common.

As tested in the treatment of a series of recent wounds, there appears to be no difference in the properties of the two substances acriflavine and proflavine. All the conclusions drawn in the previous report on acriflavine therefore hold with regard to the more easily produced proflavine.—(*Lancet*, Nov. 3, 1917.)

Acetozone as a General Surgical Antiseptic.

Lt. Col. G. Gore-Gillon and Dr. R. T. Hewlett, say that the important properties of an ideal antiseptic appear to be that it has great potency against all micro-organisms in presence of protein material, as serum, etc.; no deleterious effect on phagocytosis; is innocuous to the tissues; has a stimulating effect on connective tissue cells, so that it promotes healthy granulations; and is not toxic.

In benzoyl-acetyl-peroxide we have a preparation that fulfills these conditions. After previous experience of this substance Gillon introduced it into England in May, 1915, and has used it extensively in military hospitals since then as an antiseptic solution in the treatment of septic wounds. Its formula is $C_6H_5CO.O.O.COCH_3$, and it is known as acetozone. It has been used for years as an intestinal antiseptic in enteric fever and mucous colitis, and as a throat spray.

It may be used cold as a bath: (a) containing 5 grains of the pint (the cost is 8d. a gallon at army prices, and plenty of it is available); (b) or as a 7-grain solution with one-third hot water added. Its action is very rapid; unhealed amputation stumps heal quickly if put into a bath of this solution for half an hour daily, and dressed afterward with dressings of sterile lint or gauze soaked in the 10-grain solution. The authors have seen numerous cases of septic wounds which have resisted all other treatment for four or five months heal up in three weeks by this method.

It can be applied to deep wounds by Carrel-Dakin tubes, by the bath method, or in a waterproof bag, or by wet dressings of 10-grain strength solution, renewed two or three times a day.

Mode of Preparation.

1. The solution must be made by adding 5 to 7 grains to 1 pint sterile water at 112° F., left to stand for two hours, and should not be filtered.

2. Or a 10-grain to 1 pint solution can be used with dressings or Carrel-Dakin tubes, etc.

3. In very septic cases, swarming with anaerobes, etc., a 20-grain to 60-grain solution may be used.

4. It should be made fresh every seven days, and the bottle shaken before using.

Its oxidizing power, while acetozone in solution is a fairly stable antiseptic, and its ozone-producing power is prolonged. Acetozone has a remarkably pleasant, pungent ozonic odor, the solution is colorless, and does not stain linen. Used in a

Pure hydrogen peroxide is very unstable and momentary in 20-grain solution it is an efficient sterilizer of the skin.—(*Brit Med. J.*, Aug. 18, 1917.)

Gunshot Wounds of Knee-Joint.

Capt. Campbell and Maj. Woolfenden say their present methods of treatment in severe cases are based on three fundamentals: 1. Absolute rest and fixation. 2. The strictest asepsis. 3. The use of Carrel's method of wound treatment.

Absolute rest and fixation of the joint.—They secure these at once, whatever the hour, the patient enters the hospital. The fully extended limb is placed in an *efficiently made* Thomas's knee-splint and extended by the *fixed* method, using for this purpose stout calico bandage glued to the leg and tied round the end of the splint. The limb is supported in the splint by two sheets of perforated zinc 4x6 inches bent lengthways to accommodate the transverse curve of the part. These sheets are supported in turn by bands of aluminum strapping bent over each side of the splint. One of these sheets of zinc is laid under the thigh, the other under the calf; their position and the amount of weight that each bears can easily be regulated by bending the metal strapping at a suitable place. These supports, once applied, are never removed if it can possibly be avoided—not even for operative procedures. In this way

rigid support is given to the limb and absolute rest and fixation are secured.

To prevent too much local pressure on the muscles by the metal supports the remaining surface of the limb is supported by bands of stout flannel bandage, pinned round the splint. These flannel bands can easily be removed and reapplied with each dressing as far as is necessary. They also help to keep the dressings in place. There is no doubt as to the superiority of fixed over mobile extension—granted that the extension is attended to daily and tightened up as required by the stretching of the skin. If the extension becomes inefficient, "night starts" make their appearance, but can be easily controlled by readjusting the extension. Unless the flannel bands under the knee are kept sufficiently taut, and the metal supports slightly raised as the muscles atrophy from pressure, there may be, and in some cases actually is, a tendency to the production of genu recurvatum.

Asepsis.—This must be efficiently carried out, not only at the time of operation but also at each subsequent dressing. With this end in view it has been their custom to have all cases of wounds involving the knee-joint sent, as far as possible, to one ward, and under the care of a single medical officer, and also to have all the dressing done by the same person on each occasion, in order to avoid any division of responsibility in the treatment of the individual cases.

The use of Carrel's method of wound treatment.—The marked improvements in results recently is very largely due to the adoption of this method of wound treatment. The tubes are used either uncovered or covered with cheap Turkish toweling. The perforated portions of the tubes are passed over the entire surface of the wound and in each recess of the wound, down to its very extremity, so that in the latter case all the perforations lie hidden in the recess.

The wound is then dressed as usual with gauze moistened in hypochlorite solution, and the open ends of the tubes left free outside the dressings. Two to three drachms of a 0.5 per cent. hypochlorite solution are squirted down each tube, day and night, at two-hourly intervals, with perfect regularity.

With this method of treatment efficiently carried out we find:

1. That infection is most effectually counteracted.
2. That organisms and the pabulum suitable for their growth are washed outwards, even from the deepest parts of the wound.
3. That ingress of sepsis from without is prevented—to our minds a most important consideration in the treatment of knee-joint cases.
4. That pus only forms in small quantity.
5. That adhesions of the synovial membranes form with great readiness.
6. That the patient need only be dressed once in 24 or 48 hours.

In other words, this method of treatment fulfills all the requirements which we stated above were so necessary to the successful treatment of infected cases.—(*Lancet*, Aug. 11, 1917.)

The Adrenals in War Infections.

During the last twenty years the ductless or, as they are now called, the endocrine glands have been the subject of much valuable work, followed, it must be admitted, by some fireside speculation, and this year has seen the appearance of a journal entitled *Endocrinology*. The adrenals have had their fair share of elucidation, and an extremely interesting chapter has been provided by the observations and writings of T. R. Elliott, Cannon, and Crile, on the relation of the adrenals to emotion. As the result of anxiety or stress the adrenin is turned out into the blood stream to lend assistance in the struggle for existence, and the adrenal medulla is exhausted of adrenin. The reaction of the gland to infection has also attracted attention, and Elliott showed that in acute infections the lipoids rapidly disappear from the cortex. The war has not entirely arrested work on these lines, for Goormaghtigh (*Arch. méd. Belges*, Paris, 1917, lxx, p. 697) has published a preliminary account, from the hospital at Hoegstaede, of the macroscopic and microscopic appearances of the adrenals of seventy cases fatal from infective complications of wounds, in order to throw light on the functional activity of the glands in the presence of infections. In these cases shock and mental distress admittedly played a part so that the changes in the glands, which were removed from the body within an hour of death, cannot be ascribed solely to infection. Relying on the histological appearances Goormaghtigh considers that early in acute infections the adrenal cortex shows degenerative changes, which, it may be pointed out, resemble those figured in Crile's various books, and that lipoids are removed; in more prolonged infection the cortex exhibits some degeneration and

also evidence of considerably increased functional activity, presumably to provide an increased output of lipoids possessing an antitoxic action. The medulla also shows signs of heightened functional activity in acute infections, and from the examination of the adrenals of patients given adrenin hypodermically during life it appears that the activity of the medulla is thus stimulated.—(*Brit. M. J.*, Oct. 27, 1917.)

The Physician's Library

Diseases of the Skin. By Milton B. Hartzell, A.M., M.D., LL.D., professor of Dermatology, University of Pennsylvania. Octavo. 753 pages. 242 illustrations. 51 colored plates. Cloth, \$7.00. Philadelphia: J. B. Lippincott Co., 1917.

The high standing of the author directs favorable attention to this book, and a careful perusal justifies the good opinion which the reviewer formed before reading its pages. The subject is exhaustively treated from every angle and it is particularly helpful to the man in general medicine, as his viewpoint is given great consideration. The seventeen chapters are devoted to general consideration, to the various inflammations, hypertrophies, new growths, neuroses, etc., and each one is replete with the latest thought. The work is one which decidedly appeals to the medical man and will give added lustre to an already illustrious name.

Training and Rewards of the Physician. By Richard C. Cabot, M.D., of Harvard Medical School. \$1.25. Philadelphia: J. B. Lippincott Co., 1917.

The reader of this book will enthuse over medicine. It is inspiring and sets forth the profession idealistically, as it should be and it is Cabotesque. Read it, you physicians without a vision and get some needed thrills in your makeup. You are in "a profession which can use the whole of a man as no other profession can. The physician is the child of his age. Such an opportunity as a great painter had in the Renaissance or a great musician had in the early years of the Nineteenth Century, a physician has today. Its rewards, as I see them are beyond those of any other profession."

Medical Diagnosis. By Charles Lyman Greene, M. D., of St. Paul. Cloth. 1300 pages. Philadelphia: P. Blakiston's Son & Co., 1917.

The fourth edition has been expanded from a book of moderate length into a splendid work which does its author great credit. In every condition he goes to the very bottom, touching succinctly each point, but omitting the verbiage that oftentimes makes a small book ponderous in volume if not in worth. Greene is essentially a teacher and his pages stand forth with didactic clearness. In many ways this volume excels most of the books on the same subject, especially in its lucidity and its value as a clinical beacon light.

The small book has developed into a great one in more ways than one.

A Practical Text-book of Infection, Immunity and Specific Therapy. By John A. Kolmer, M. D., Assistant Professor of Experimental Pathology, with an introduction by Allen J. Smith, M. D., Professor of Pathology, University of Pennsylvania. Second edition. 978 pages, with 147 original illustrations. 46 in colors. Cloth, \$7.00 net, Half Morocco, \$8.50. Philadelphia and London: W. B. Saunders Company, 1917.

Not long since we welcomed the advent of the initial edition of this book and now the advances of science have demanded a second edition. Many additions have been made to its pages, not the least important of which are the Schick test, a quantitative Wassermann reaction and new thoughts in chemotherapy. The book is a standard and is most worthy of all the recognition it has received.

Surgical Nursing in War. By Elizabeth R. Bundy, M. D., of the Woman's Hospital, Philadelphia. 75 cents. Philadelphia: P. Blackiston's Son & Co., 1918.

This is a useful book for nurses preparing for war service, as it covers in detail the work with which the war nurse will come in contact. The new and additional labors of a nurse among soldiers warrants are nurses who expect to care for our country's defenders in reading this little book.

Thrift the Patriot's Watchword.

Another Liberty Loan will soon be asked for. Americans individually will need to squeeze the dollar they spend on themselves as they never yet have been accustomed to do. Luxuries and extravagance must go completely out of fashion, should, in fact, be considered little short of treachery. Shabby clothes and old hats must be worn longer, diet be cut to the wholesome essentials, and we must no longer hire others to do for us those things which we can do for ourselves.